HANDBOOK OF EYE, EAR, NOSE AND THROAT DISEASES

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PREFACE

In preparing this little volume it has been the aim of the author to place within the reach of the physician a brief resume of eye, ear, nose and throat diseases to which he may turn when in urgent need and when lack of time prevents him from consulting the more voluminous text books. The book is largely the result of the author's own observation and study and is meant to be a condensed synopsis of the more common diseases, together with the practical points regarding the treatment of each. The formulæ appearing throughout the text have been gleaned from a large number of text books and journals and many of them have been used continuously in the author's practice throughout a period of twenty years. The work has been written for the use of the general practitioner, and it is hoped that it may prove to be of real service to him.

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Handbook of Eye, Ear, Nose and Throat Diseases

DISEASES OF THE EYE

Stye (Hordeolum)

An infection of the follicles of the eye lashes may be caused by direct contact. In cases of blepharitis, or pruritus of the lids, when the patients indulge in rubbing the lids with the fingers, the condition is a frequent complication. Quite often, especially in physically impoverished children, recurrent styes point to errors of refraction.

Treatment:

In its incipiency a stye may be "scattered" by the application of heat. For this purpose cloths wrung from a hot saturated solution of boric acid often give splendid results. These fomentations are very gratifying to the patient, as they have a tendency to lessen the tension in the lid, thus diminishing the pain. Even if they do not retard the formation of the stye, they, at least, soften the underlying tissue, making the process of suppuration less painful. The compresses should be changed every few minutes having been applied as hot as they could be borne. If the stye ruptures spontaneously, the applications should be discontinued, and some bland ointment be applied to the lids. If the patient is seen prior to the rup-

ture of the stye, much relief may be obtained for him by incising the lid over the bulging area.

Either of the following formulæ may give good results:

℞.	Sulphur sublimati,	gr. l.
	Ammonii chloridi,	gr. x
	Aquae rosae,	dr. vi
	Aquae camphorae, q. s. ad.	oz. i
M. Sig:—	Apply to lids after thorough cleansing.	

℞.	Hydrargyri oxidi rubri,	gr. xx.
	Adipis lanae hydrosi,	oz. i
	Fiat unguentum,	
Sig:—	Use as an eye ointment to prevent the recurrence of styes.	

Chalazion (Meibomian Cyst)

This chronic affection of the Meibomian glands develops slowly, and is sometimes attended with no discomfort to the patient. The growth, occasionally attaining the size of a bean, is situated in the tarsal cartilage. As there seldom are inflammatory symptoms present, relief from a cosmetic standpoint only is sought by the patient.

Treatment:

It is better to leave the smaller tumors undisturbed. Hot fomentations of normal salt solution, applied to the eyes before retiring, and followed by applications to the affected lid of a one per cent. yellow oxide of mercury ointment, is about the only treatment indicated for the smaller tumors. The larger ones should be removed. The incision should never be made through the skin, as the natural opening of the gland is on the mucous surface.

The mass, naturally, is more easily evacuated from this point. The operation for incision and curettage is very simple; but sometimes the method of procedure does not effect a cure, and the chalazion will have to be dissected out with its sac. When this is done, the condition seldom returns.

Nothing has given the author such good results as the following combinations:

℞. Boroglycerini (30 per cent.) oz. ½
Sig:— Apply to margin of lid over affected area.

℞ Hydrargyri oxidi rubri, gr. xx.
Petrolati alba, dr. i
Ung. aquae rosae, q. s. ad., oz. i
M. Sig:— Apply to margin of lids at night.

Blepharitis Marginalis

An infection of the lid margins, known as blepharitis, results from general malnutrition of the patient or it may be due to neglected errors of refraction.

Treatment:

The treatment consists first in attending to the general health of the patient and in seeing that the eye strain is relieved by properly adjusted lenses. Before applying any medicament to the lids the scales that adhere to the palpebral margins must be removed. This is best accomplished by rubbing the margin of the lids with glycerin and following the application with a gentle scrubbing of the lid margin, using for this purpose cotton twisted upon a probe, or the lid may be freed from scales by application of hot boric acid solutions attended by

gentle friction of their margins. Following the cleansing a mild antiseptic ointment should be applied. It is preferable that the local treatment of this condition be applied at night for obvious reasons.

The prescriptions following will be found serviceable:

℞.	Sodii perborate,	gr. v.
	Unguenti hydrargyri oxidi flavi,	dr. i
	Unguenti aquae rosae,	oz. iii
M. Sig:—	Apply to lids at night.	

℞.	Sulphuris praecip.,	gr. v
	Petrolati,	dr. vi.
M. Sig:—	Apply to lids after bathing with boric acid solution.	

℞.	Sodii boratis,	dr. vi.
	Aquae destillatae,	O. i
M. Sig:—	Bathe margins of lids to remove encrustation.	

℞.	Acidi borici,	dr. i
	Aquae destillatae,	oz. v.
M. Sig:—	Bathe eyes every three or four hours to remove crusts.	

Herpes Zoster Opthalmicus (Shingles)

This disease affects the tissues overlying the course of the opthalmic nerve, being accompanied by crops of vesicles upon the cornea and conjunctiva, as well as upon the skin, which break down causing ulceration. The accompanying pain is often excessive and is usually preceded by a pricking, burning sensation of the skin overlying the forehead and lids. It is nearly always a disease of senility.

Treatment:

The treatment consists in measures to relieve the pain. Lead water and laudanum is often beneficial. Bland ointments may protect the cornea and prevent ulceration. Atropine is indicated if the cornea is involved, provided increased intraocular tension does not exist.

The following formulæ will be found useful:

℞. Tr. benzoin, dr. iii
Ung. aqua rosae, q. s. ad. oz. i
M. Sig:— Apply to affected areas several times a day.

℞. Ung zinc oxidi,
Lanolini
Ft. ung.,
Apply constantly.

Blinking of the Eye Lids

Closely allied with chorea, and often confused with it, is the condition known as habit spasm. In it we find spasmodic movements of the muscles, usually of the face, which are confined to one group. These spasms are most commonly found to affect the muscles of the eye lids, though other groups are sometimes involved. At first the movements are scarcely perceptible, or may escape notice entirely. If persisted in they become more marked and occur with greater frequence.

The child blinks or twists its face and continues to do so even when reprimanded. Punishments never help, and often exaggerate the condition. The chiding of fellow pupils aggravates the symptoms and the condition progresses rapidly until the child is taken from school. In neglected cases the disease may become permanent and

continues through life. The cause is often to be found in perverted general health associated with a neurosis or nervous temperament, either inherited or acquired.

Treatment:

The object of the treatment in these cases is to remove the cause. The eyes should be examined for muscular errors; the nervous system should be built up by rest, appropriate food and sufficient sleep; and school work should be entirely suspended. The syrup of the iodide of iron is a favorite remedy in this condition.

Entropion

An inversion of the lid, or entropion, may be spastic in nature, or it may be due to some process which causes a contraction of the tarsal cartilage. It is a very frequent complication of trachoma and its presence in this disease is often the cause of the pannus seen in the later stages of the condition.

Treatment:

In the spastic form the lid may be kept everted by the application of strips of adhesive to the lid and cheek or the same result may be accomplished by painting the surface of the lid with collodian, which contracts as it dries, thus reducing the deformity. If these measures do not bring relief a plastic operation for the cure of the condition is indicated.

Ectropion

Eversion of the lower lid is an exceedingly troublesome condition because with it is usually associated an epiphora due to a misplacement of the punctum lacrymalis. The

normal escape of the tears thus being interfered with, the lacrymal secretion escapes upon the skin surface causing a continuous irritation or even a chronic dermatitis. The condition is often met with in neuro-syphilis, it then being due to a paralysis of the orbicularis muscle. Frequently, it is seen in the aged, being a natural result of the relaxation of muscle tissue generally. Children with interstitial keratitis sometimes develop the condition in its spastic form.

Treatment:

Except in the spastic form the condition is not amenable to any but surgical treatment. When the eversion is the result of spasmodic contraction of the lid, strips of adhesive plaster placed longitudinally may overcome the contraction, or the lid may be held in position by the application of a compression bandage.

Stricture of the Lacrymal Punctum

This often occurs in trachoma cases in which blue stone has been used extensively, or it may be due to cicatricial tissue resulting from the trachoma itself. It is often brought about by trauma. Once I saw a case due to a cut with a finger ring received during a street brawl. I remember having seen another case resulting from a contused wound caused by a flying chip of stone. In the latter case the punctum was entirely obliterated.

Misplacement of the punctum is nearly always brought on by a contraction of the integument of the lower lid, either from ectropion or from scar tissue of the face. In these cases the principal disagreeable symptom is epiphora. The tears, by continually flowing down the cheek, often keep up a dermatitis which is troublesome

and unsightly. This is usually aggravated by the attempts of the patient to dry the eye with the handkerchief.

Foreign bodies, such as concretions, may cause a closure of the punctum lacrymalis. Growths upon the lid may produce a like result. Another very frequent factor in the production of this trouble lies in unskilled attempts at probing the duct. The punctum lacrymalis may be torn during this procedure, the resulting adhesions permanently closing the opening.

Another cause of the closed canaliculus may be found in irritation of the conjunctiva and consequent swelling of this membrane from eye strain. In my own work I have seen several cases with rather persistent epiphora which were entirely relieved by the proper correction of their errors of refraction. Several cases have responded beautifully to the daily cleansing of the duct, and to all appearances, are permanently relieved.

Treatment:

Freely dividing the canaliculus, except in cases with positive indications—such as punctum or canaliculus strictures, should be avoided as the results are often far from desirable. Epiphora, due to punctum displacement from ectropion, may be relieved by a plastic operation on the lid. Even where there is much cicatrization of the skin on the cheek with considerable contraction, giving rise to a constant overflow of tears, much may be done to alleviate the condition by plastic surgery, the operation serving a double purpose of relieving the deformity and checking the epiphora.

Catarrhal Inflammation of the Lacrymal Duct

Catarrhal inflammation of the duct and sac usually has as its etiologic factor an abnormal condition of the nose. This may be a pressure of deflected septi on turbinals causing stricture of the lower end of the canal, or the cause may be found in polipi and other nasal tumors packed around the mouth of the canal. Syphilis has been known to cause a closure of the canal opening. This may occur during the secondary stages due to mucous patches at the orifice or it may be seen in the tertiary stage resulting from gummatous deposits about the opening.

In this condition, when due to obstruction, the most noticeable symptom, besides the epiphora, is a distension varying all the way from a swelling scarcely perceptible to a protrusion as large as a pigeon's egg. Slight pressure over this distended wall causes a black flow of mucus from the canaliculus.

Treatment:

The nasal chambers should not escape attention in these catarrhal conditions of the duct. Very often this affection is due to the extension of a similar condition in the nose, which by a catarrhal swelling of the mucous membrane, causes an occlusion of the opening of the duct. Nasal tumors, polypi and enlarged turbinals which are found to be responsible for the mechanical closure of the orifice should be removed. Deflected septi should be straightened. The nose should be sprayed or syringed with some preparation which will reduce the hypertrophy of the mucous membrane and keep the nose free from secretions.

The following formulæ will be found serviceable:

℞.	Sodii. perborate,	gr. v
	Sodii. bicarb.,	gr. x
	Adrenalin chloride,	dr. i
	Aqua dest. q. s. ad.	oz. 1

M. Sig:— Spray nose two or three times a day to reduce congestion of the turbinals.

℞.	Phenol,	gr. iii
	Glycerine,	dr. iii
	Aqua camph.,	oz. i
	Aqua dest. q. s. ad.	oz. iii

M. Sig:— Spray nose frequently for catarrhal inflammation of the lacrymal duct.

Abscess of the Lacrymal Sac

Abscess of the lacrymal sac usually follows in the wake of an inflammatory process in the duct with obstruction of its lower end. The secretions which have been retained long in the sac become infected with consequent abscess formation. Besides pain, which is often intense, the condition may be accompanied by chills, fever and general malaise. An intense blush over the side of the nose, lids and face may accompany this condition. This deep redness of the skin with swelling and edema of the lids has very often been mistaken for erysipelas. I remember, while doing my first general practice, of making this mistake, the diagnosis being cleared up a few days later by a consultant, rather to my chagrin.

Usually fistula of the lacrymal sac has as its cause a neglected abscess. The rupture of this abscess will, in the large majority of cases, leave a fistulous opening. I

do not recall ever having seen a ruptured lacrymal abscess that did not leave a fistula and I never saw a fistula which was not due to an abscess. A number of cases have been reported, however, which have resulted from syphilitic processes in the bone and soft parts.

Treatment:

When abscess threatens ice should be kept constantly applied to relieve the inflammation. Hot compresses predispose to the formation of pus and should be avoided. The canaliculus should be slit and the sac washed out every ten or twelve hours with some antiseptic solution. When an abscess has formed in the sac, and has either ruptured spontaneously or has been incised, a fistula is the inevitable outcome. In all these cases of fistula the treatment is surgical and an extirpation of the sac should be advised.

Ptreygium

Pterygium consists of a mildly inflammatory thickening of the ocular conjunctiva. It is of a triangular shape and, after it encroaches upon the cornea, attaches itself by its neck, thus having both a corneal and conjunctival attachment. Some pterygia are very thin and fibrous, while others are swollen, fleshy, and continuously engorged with blood. The latter tend to grow more rapidly and when removed have a greater tendency to return. Usually pterygia make their appearance on the nasal side of the cornea; though occasionally they are seen on the temporal side.

The growth causes a disturbance of the vision as soon as it encroaches upon the cornea, due to the astigmatism

which it produces. After it extends to the margin of the pupil, it materially limits the field of vision. Should it not be removed before it covers the pupil, vision in the eye will, of course, be lost. An operation at this stage does little good, the scar tissue formed in the outer layers of the cornea materially interfering with vision.

Pterygia occur most often to those who continuously expose their eyes to irritation. In the semi-arid West the disease is very common, because of the frequent dust storms. Persons who drive much over dusty roads are particularly liable to the development of this condition.

Treatment:

In the event that the pterygium is of the non-progressive type and involves the cornea but little, no treatment is necessary except the correction of what astigmatism it originates. If the growth is swollen and inflamed and is accompanied by conjunctivitis, a collyrium containing adrenalin chloride may be used. This drug has the advantage of lessening the injection of the conjunctiva; though it is questionable that it exerts any influence for good in the way of starving out the growth by cutting off the blood supply, as has been claimed. Some surgeons have advocated ligating the pterygium at its neck, and while its progress toward the pupil may be delayed by this method, it is probable that the suture does little more than palliate the condition. Its use has the disadvantage of causing an unsightly eye and it occasions more pain, usually, than is experienced after the complete resection or transplantation of the hypertrophy.

As a soothing and cosmetic lotion the following is of service:

℞.	Sodii perboratis,	gr. vii
	Adrenalin chloride,	dr. iii
	Aqua dest, q. s. ad.	oz. i

M. Sig:— Drop in eye for cosmetic effect when operation is delayed.

Operation for Pterygium

After the eye is anesthetized by the instillation of a drop of a four per cent. solution of cocain, at intervals of a minute or so, for four or five times, the speculum may be introduced. The pterygium is now seized by a fixation forceps, elevated slightly, and the portion adhering to the cornea is carefully dissected. The same result may be obtained by slipping a strabismus hook under the neck of the pterygium, and then making gentle traction toward the pupil. When freed from the cornea, the pterygium should be separated from the normal conjunctiva, from its base to the sclera-corneal margin. This is best done with small scissors. The pterygium may then be excised and a slit be made in the conjunctiva at the corneal margin to permit the conjunctival borders being brought together and sutured so as to cover the denuded areas, or the growth may be transplanted in the manner suggested by McReynolds.

Acute Catarrhal Conjunctivitis

In the acute form conjunctivitis is nearly always due to infection. This type of the disease is thought to be contagious, as widespread epidemics are sometimes seen, especially in metropolitan districts, where the poor are improperly housed and have little opportunity for the practice of personal cleanliness. The exciting organism may be either the streptococcus, pneumococcus, or staphlo-

coccus. Occasionally the Morax-Axenfeld and Koch-Weeks bacilli are found responsible for this condition.

Treatment:

The disease is usually self-limited, but treatment directed toward cleansing the mucosa of discharges, contracting the engorged blood vessels by the use of astringents, and the application of iced compresses to reduce the inflammation, usually results in shortening the duration of the condition.

Beneficial results are obtained from using one of the formulæ below:

℞.	Sodii chloridi,	gr. x
	Acidi borici,	gr. x
	Aquae camphorae,	dr. i
	Aquae dest. q. s. ad.	oz. ii
M. Sig:—	Use as an eye bath 2 or 3 times daily.	

℞.	Sodii chloridia,	gr. x
	Acidi borici,	gr. x
	Aquae camphorae,	dr. i
	Aquae dest.,	o. z. t.
M. Sig:—	Apply freely with eye cup 3 or 4 times daily.	

℞.	Acidi borici,	gr. x
	Sodii biboratis,	gr. v
	Ext. hamamelis dest.,	dr. i
	Aquae camphorae,	dr. i
	Aquae destillatae, q. s. ad.	oz. i
M. Sig:—	Drop in eye 4 times a day. An especially soothing preparation.	

℞.	Zinc, sulphat,	gr. i
	Aquae destillatae,	oz. i

M. Sig:— Drop in eyes 3 times daily.
Useful in catarrhal conjunctivitis.

℞.		
	Acid. boric,	gr. v
	Cocain. hydrochlor.,	gr. i
	Aquae, q. s. ad.	oz. i

M. Sig:— Drop in each eye 3 times daily.
Very effective during the painful stages of acute conjunctivitis.

Chronic Catarrhal Conjunctivitis

A chronic catarrhal conjunctivitis will often result from a neglected case of the acute form. Usually it is predisposed to by external conditions—such as smoke or dust, or it may be a direct consequence of long continued and uncorrected errors of refraction. The condition of the general health of the patient has much to do with the transition of an acute conjunctivitis to that of the chronic type.

Treatment:

Errors of refraction must have attention. Occupational environment, where smoke or dust are responsible, must be improved. When the condition is due to debility, attention should be given to the correction, if possible, of this factor.

The following combinations may be considered excellent:

℞.		
	Zinci sulphatis,	gr. i
	Morph. sulphatis,	gr. i
	Acid borici,	gr. x
	Aqua dest, q. s. ad.	oz. i

M. Sig:— Drop in eyes 3 times a day.

℞.	Argent nitras,	gr. i
	Aquae dest.,	oz. i

M. Sig:— Drop in eyes 3 times a day.

℞.	Sodii biboras,	gr. x
	Aquae menth. pip.,	dr. ii
	Aquae camphor,	dr. iii
	Aquae dest., q. s. ad.	oz. i

M. Sig:— Drop in eyes several times a day.

Parinaud's Conjunctivitis

This condition is somewhat rare. It consists of an invasion of the conjunctiva by exuberant lymph follicles, with which is associated an enlargement of the lymphatic glands of the neck. There is present a profuse mucous discharge which is said to be very infectious. In a case which I treated five years ago there was a marked eversion of the lower lid, due to the abundance of the follicles, with associated edema. Suppuration of the lids sometimes occurs, accompanied by chills and an elevation of temperature. Despite the virulence of the infection the cornea is seldom, if ever, involved.

Treatment:

Gifford, who has made an exhaustive study of this disease, recommends the daily application of the copper sulphate stick. Removal of the follicles by expression, followed by astringents, has been advocated. The yellow oxide of mercury ointment is a favorite remedy. Regardless of what therapy is used Parinaud's conjunctivitis will always be found a most obstinate condition.

The following combinations are extensively used:

℞. Argentum nitras, gr. x
Aqua dest., oz. i
M. Sig:— Paint everted lids once daily and wash off excess of solution.

℞. Hydrargyri oxidi rubri, gr. v
Vaselini, oz. i
Sig:— Apply to everted lids twice a day.

Parasitic Conjunctivitis

This repugnant condition is found associated with a blepharitis resulting from the invasion of the lid with lice. The parasites may, by close inspection, be seen adhering to the lashes with their heads toward the tarsal border. They adhere so snugly to the cilia, and simulate the color of the lashes so closely that frequently they are overlooked. They seem to be confined altogether to the lashes of the upper lid, possibly because these are longer and more thickly set than are the lashes of the lower lid, and thus afford more protection.

Treatment:

These parasites are usually of the pubes variety and are removed with much difficulty. In recent years I have not made any attempts to displace the pests, but have invariably prescribed mercurial ointment, always with specific effect. Yellow oxide of mercury ointment is also widely used. A number of other antiseptic ointments have been recommended.

The following combinations will be found successful:

℞. Ung. hydrargyri,
Vaselini alba,

Ft. ung.,
Sig:— Apply to lids several times a day.

℞. Hydrargyri, oxidi rubri, gr. i
Vaselini, dr. iii
M. Sig:— For external use to margins of lid.

Diphtheritic Conjunctivitis

Infection of the conjunctiva with the Klebs-Loffler bacillus is sometimes seen and often proves disastrous to vision, though some cases recover without sloughing of the cornea. Occasionally the disease spreads to the lids, with symptoms of general infection not unlike those resulting from a similar infection in the throat.

Treatment:

The treatment consists of the immediate injection of diphtheria antitoxin in large doses, with frequent cleansing of the conjunctival sac and the instillation of solutions of atropine sulphate. The membrane must not be removed from the cornea until it liberates itself. Bland ointments are indicated.

The following are good combinations for use in this disease:

℞. Atropine sulph. gr. i
Sodii perboratis, gr. x
Aqua dest. q. s. ad. oz. i
M. Sig:— Drop in eyes 4 times a day.

31. ℞. Cupri sulphatis, gr. 1/10
Acidi salicylici, gr. i
Cocain hydrochloratis, gr. i

Petrolatum, dr. iv
M. Sig:— Use locally

Gonorrheal Conjunctivitis (Purulent Opthalmia)

Gonorrheal infection of the eye is usually caused by the transference of Neisser's diplococci to the conjunctival sac by direct contact, though it occasionally results from metastasis. The period of incubation varies from a few hours to three or four days, the first symptom being an injection of the conjunctiva. This is soon followed by a marked chemosis with turbid secretion which soon becomes purulent. If the disease is not treated promptly and effectively, ulceration of the cornea results, often ending in permanent opacity and blindness.

Treatment:

The physician must exercise the greatest care in order to protect his own eyes from infection. When the lids of an eye infected with gonorrhea are opened the retained pus frequently spurts a considerable distance making infection of the attendant particularly liable. It is a wise precaution for physicians and nurses in attendance upon such a case to wear broad protecting lenses to minimize the danger. When one eye only is infected, the sound eye must be protected by a shield of the Buller's type. This is held in position by strips of adhesive plaster. Ice packs should be applied to the lid; though this must be done with caution, as too much refrigeration of the cornea lessens its resistance and predisposes to sloughing. The local treatment consists in thorough cleanliness and the application of antiseptic astringents. The former may be promoted by gently separating the lids hourly and gently irrigating

the eye with a saturated solution of boric acid. The conjunctiva, if the chemosis does not prevent eversion of the lids, may be painted thrice daily with a three per cent. solution of nitrate of silver, the excess of the preparation being washed off with normal salt solution. Atropine should be instilled to prevent the complication of cyclitis.

A very common but efficient prescription for this disease is as follows:

℞.	Hydrargyri chloridi corrosivi,	gr. 1/100
	Atropine sulph.,	gr. i
	Aquae camphorae,	dr. i
	Aquae destillatae q. s. ad.	oz. i
M. Sig:—	Drop in eye 3 times a day.	
	Useful when complicated with iritis.	

℞.	Argenti nitratis,	gr. i
	Aquae destillatae,	oz. i
M. Sig:—	Drop in eye 3 times a day.	

℞.	Hydrargyri, oxidi flavi,	gr. iii
	Vaselini,	drs. ii
M. Sig:—	Apply between eye lids 4 times daily.	

Opthalmia Neonatorum

Gonorrheal involvement of the eyes of the infant is invariably caused by a specific germ, the gonococcus, first discovered by Neisser in 1879. The organisms are transmitted to the child's eyes by the secretions of the mother at the time of birth. It usually appears about the third or fourth day manifesting itself by a suffusion of the mucous membrane with blood. Later the lids become swollen so that the eye cannot be seen. The discharge from between

the lids, which is at first slight and of a watery character, soon becomes yellow, then creamy and tenacious. Ulcerations occur in the cornea which, if extensive, lead to blindness by the formation of scar tissue.

Prevention:

Among all the preparations which have been advocated for the prevention of ophthalmia in infants nitrate of silver stands first. A report from Miller of Pittsburg, demonstrates the effectiveness of this preventive measure. He states that in one thousand, two hundred and sixty-two births occurring during the last seven years in the various hospitals of the city, the nitrate of silver was used in the infants' eyes as a routine, and among these not a single case of ophthalmia neonatorum developed. In the Sloan Maternity hospital in New York all babies' eyes are thus treated and for the last six years, with a total of four thousand, six hundred and sixty births, there has not been a single case of this disease. In the face of such evidence is it not criminal to neglect the use of this drug in the eyes of all new-born babies regardless of circumstances?

Treatment:

The treatment does not differ from that of gonorrheal opthalmia in the adult. The general nutrition of the infant must be given attention as lowered resistance predisposes to ulceration and sloughing of the cornea. As atropine is not well borne by children its local use, to promote mydriasis, should be carefully watched.

The following preparations are of value:

℞.	Zinci chloridi,	gr. i
	Acidi borici,	gr. vi

	Aquae camphorae,	dr. i
	Aquae destillatae, q. s. ad.	oz. i

M: Sig:— Use in ophthalmia neonatorum when the secretion is profuse.

℞.	Quininae hydrochlor.,	gr. ii
	Aquae camphorae,	dr. ii
	Aquae destillatae, q. s. ad.	oz. i

M. Sig:— Eye lotion. Useful when there is much edema.

℞.	Sol. hydrargyri bichloridi,	1-10000

Sig:— Apply with cold compresses.

Follicular Conjunctivitis (Folliculosis)

It is believed that trachoma and follicular conjunctivitis are not one and the same disease, though such an eminent authority as Fuchs says that no histological difference can be found between them. In some cases we are absolutely unable to make a differential diagnosis, except by observing for months the course which the disease takes.

Treatment:

In follicular conjunctivitis, where the granules are very abundant in the retrotarsal fold, the quickest results, I believe, are obtained from surgical treatment. Operation should not be resorted to, however, if much inflammation and swelling of the conjunctiva exists, until this is allayed by local applications.

The use of combinations below may be followed by relief:

℞. Zinci sulphatis, gr. i
Aquae destillatae, oz. i
M. Sig:— Drop in eyes three times daily.

℞. Zinci sulphatis, gr. i
Morphine sulphatis, gr. i
Aquae destillatae, oz. i
M. Sig:— Drop in eyes two or three times a day.

℞. Acidi borici, gr. x
Sodii biboratis, gr. x
Aquae menthae, dr. ii
Fluid extracti hamamelis, dr. iii
Aquae camphorae, dr. iii
Aquae destillatae, q. s. ad. oz. iii
M. Sig:— Bathe the eyes freely 2 or 3 times a day.

Trachoma (Granulated Lids)

Of all the diseases in the domain of ophthalmology, perhaps trachoma was the first to receive the attention of physicians. During the infancy of the healing art, Hippocrates described a condition of the eye which is now believed to have been this disease. The principles of his treatment in over two thousand years have not been materially changed. The ancients, while they treated this disease, did not know what produced it, and even at this time we must admit that our knowledge relative to its cause is incomplete, and that its pathology is still a question of dispute. Much has been written about trachoma which, when summed up, consists of a mass of uncertainties and conflicting theories.

We long ago arrived at the conclusion that the disease is of an infectious nature, and that it can be transferred

from one eye to another by the secretions and, though a number of micro-organisms have been described as being present in the discharge from trachomatous eyes, the specific germ causing it is unknown. The ravages of trachoma epidemics are offered as proof that the disease is contagious, and yet we often find an isolated case of the most virulent type of trachoma in families where no precautions to prevent its spread have been practiced; then, too, we frequently see trachoma of years' standing confined to one eye where nothing has been done by the patient to protect the other eye from infection. We do not know why this is. We believe that certain races are predisposed to it. We know that the negro is practically immune, and that the Hebrew is particularly liable; but the reason for this is clouded in mystery. We are unable to determine whether in certain races a predisposition to the condition is inherited, or whether the trachoma is due to a total disregard of ordinary cleanliness by those races most affected.

Many observers claim that the disease is influenced by climate, and cite as an illustration its peculiar geographical distribution. Others question how this can be so, since its ravages are equally severe among the serfs of frozen Russia and the peasantry of Southern Italy. Northern Russia and Scandinavia lie at about the same latitude. We know that trachoma thrives in Russia and is almost unknown in Scandinavia. In Ireland and Scotland the climate does not differ materially, yet the Irish, as a race, are trachomatous, while the Scotch are rarely affected.

Some believe that the condition is due entirely to the influence of filth and unhygienic surroundings, and to

illustrate this refer to its ravages in the slums and tenement districts of large cities and among the ignorant peasantry of Europe. This may be true, but Duane and other observers have noted that the disease is common and often virulent in the Middle Western States, where the inhabitants, we may believe, have a fair knowledge of the principles of ordinary cleanliness, and whose surroundings are reasonably wholesome. Here in Texas the disease is common and unusually virulent.

Treatment:

Direct application to the lids of astringents and mild caustic agents are indicated in all cases, whether an operation is performed or not. These agents are supposed to produce an absorption of the granulations. De Schweinitz condemns pushing the caustic treatment to an extent sufficient to produce scar tissue in the conjunctiva. This, it seems to me, is a good precaution, for the scar tissue in the lid causes more harm than does the original malady itself.

I have secured good results from a daily massage of the lids with a 1-500 bichloride solution. This treatment causes considerable reaction and is sometimes painful, but is more easily borne than is the copper sulphate stick, as the lid clears up, leaving only a small amount of the scar tissue, and this we may attribute to the destruction of the conjunctiva, by the trachomatous process itself. When there is much secretion, nothing, I think, gives us better results than a 2 per cent. solution of nitrate of silver applied to the lids two or three times a day, carefully washing off the excess after each application with a normal salt solution. By this method, the secretion may usually

be controlled in a short time. I have used argyrol and some of the other products of silver in these cases, applying them in solution to the lids daily, and vigorously rubbing the preparation into the conjunctiva with cotton on a probe. I do not know whether the improvement which we obtain from this method of treatment is due directly to the virtue of the drug itself or to the massage of the conjunctiva after its application. To hasten absorption of the granulations in the later stages of the disease, boroglyceride 33⅓ per cent. is a standard remedy. It is applied with a mop on absorbent cotton.

I have used the formulæ below over a period of fifteen years, with uniformly favorable results:

℞.	Adidi tannici,	gr. x
	Glycerini,	oz. i
M. Sig:—	Apply to everted lids once a day.	

℞.	Acidi borici,	gr. v
	Sodii chloridi,	gr. v
	Aquae destillatae,	oz. i
M. Sig:—	Wash out the eyes 3 or 4 times daily.	

℞.	Boroglycerini,	oz. i
Sig:—	Apply to everted lids at night.	

Operations for Trachoma

Expression of the follicles with a Knapp or a Noyes forceps seems to bring the best results with the least injury to the conjunctiva. I have practiced this method several times and have never seen much scar tissue result from the operation. The granules are squeezed out between the rollers or rings of the forceps. If this is done carefully,

only a slight destruction of the conjunctiva takes place.

After the inflammation which follows this operation has subsided, the lids are to be treated by local application, and if necessary the expression can be done the second time. Scarifying the conjunctiva and rubbing it vigorously with a toothbrush, commonly known as "grattage," seems to me to entail too great a mutilation of the conjunctiva. Excision of portions of the conjunctiva in which the granules are abundant is over-radical treatment, for it produces a great deal of scar tissue, the very result which we are attempting to prevent.

A modification of Galezowski's operation with an additional removal of the tarsus was originated by Heisrath and popularized by Kuhnt. In this country it has been done extensively by Casey Wood and others, though some authors vigorously condemn it because of the ptosis and other untoward results which it has rarely occasioned. The operation is done in the following manner. The upper lid is everted with a Noyes ring or fixation forceps and while it is held by an assistant an incision is made at the dividing line between the ocular and bulbar conjunctiva extending from canthus to canthus. Three sutures are now inserted through the margins of the conjunctiva and turned over to an assistant. With a horn spoon supporting the tarsus, another incision extending from each canthus and uniting with the ends of the incision previously made above, is made one-eighth of an inch from the edge of the cilia. The tarsus and intermediate conjunctiva is now dissected out and the conjunctival edges approximated and sutured. The middle suture is sometimes brought through the skin and tied, thus protecting the cornea from the irritation which

would otherwise be produced by the knot. The operation has given good results and is perhaps the most rational operative procedure which can be resorted to in this virulent form of trachoma.

Phlyctenular Keratitis (Scrofulous Keratitis)

This disease usually occurs coincident with a similar condition upon the conjunctiva, where the disease usually makes its first appearance as a small nodule near the sclera-corneal margin. Soon a network of minute blood vessels make their way between the layers of the cornea, and are seen to surround a dense, slightly elevated and infiltrated area; the corneal phlyctenule. This lesion is nearly always located at a distance of about one millimeter from the border of the conjunctiva. Shortly after the formation of the vesicle it ruptures leaving a greyish ulcer surrounded by haziness of the adjacent cornea. The associated conjunctivitis results in engorgement and elevation of a portion of the membrane circumscribing the conjunctival phlyctenule.

Photophobia usually develops together with increased lacrymation, some impairment of the vision and, in severe cases, especially in children, a marked blephoraspasm. This is often so intense that it is impossible to make a thorough examination of the eye without an anesthetic or without using a lid retractor. There is usually little pain.

In children, among whom the disease is most common, there will often be present a "strumous diathesis." The child looks underfed, is anemic and may give a positive Wasserman blood reaction. While it cannot be said that

lues is responsible for all phlectenules it, without question, is often a predisposing factor in the disease.

Treatment:

The eye should be protected from the light by an appropriate shade but it is not to be kept bandaged as the dressings serve to retain the secretions. Iced applications are frequently well borne and are of service in reducing the inflammation. Many local measures are advocated such as dusting the cornea with calomel or applying ointments of hyocyamus, yellow oxide of mercury or boric acid. Atropine is indicated to prevent the complication of iritis though it rather increases than diminishes the fear of light. Holocain solutions have been recommended, but their use tends to soften the cornea by retarding nutrition. Constitutional measures are not to be overlooked. The bowels should be kept free and the patient should be put upon a nourishing diet. The syrup of the iodide of iron is often beneficial. Where lues is demonstrated by the Wasserman test a vigorous anti-syphilitic treatment must be instituted.

One of the following combinations is indicated:

℞. Syrupi ferri iodidi, oz. i
Liquoris potassii arsenitis, dr. i
M. Sig:— Three to five drops in water after meals.

℞. Atropinae sulphatis, gr. i
Aquae destilatae, oz. i
M. Sig:— Drop in the eye 2 or 3 times a day.

℞. Sodii chloridi, gr. ii
Aqua dest. oz. i
M. Sig:— Inject ten minums under conjunctiva daily.

Interstitial Keratitis (Syphilitic Keratitis)

A parenchymatous inflammation of the cornea of children involves the deep, as well as the superficial layers of this structure. The condition, while of long duration and while resulting in leucoma, more or less complete, is not an ulcerative disease. It was formerly thought to be due to a scrofulous diathesis, but it is now recognized as being syphilitic in nearly every instance. The disease usually manifests itself first in one eye, and is evidenced by a deep pericorneal injection, steaminess of the cornea, and photophobia. The fellow eye nearly always becomes involved later. The child usually is of the type so often seen in inherited lues. Frequently it looks normal and remains apparently so for months or even years. When symptoms of the disease exist at birth, they generally are in the form of eruptions upon the skin. The skin is thick, has a reddish tinge, and is of a shiny appearance. Later, the peculiar flushed appearance gives way to a much darker shade, resembling tanned leather. Fissures occur in the skin, especially around the mouth, and are due to a cracking of its surface from tension. These may ulcerate, making ugly sores. Ulcerations may occur upon the fingers and may continue until the nails are lost. Skin sores and disease of the roots of the hairs in the scalp may leave the head almost denuded of hair. The bones are often affected later in life, giving rise to all kinds of deformities. The long bones are sometimes enlarged at their extremities. There is frequently complete loss of motion in the limbs, a condition sometimes called syphilitic paralysis. Coryza, or a discharge from the nose, is present in a large per cent of syphilitic children. This discharge is at first

clear, but, because of ulceration in the nose, may soon become bloody. Often it is very irritating in character, keeping the skin about the nose and mouth perpetually excoriated. The teeth at the second dentition are "pegged," and have a notched appearance, a peculiarity first noted by Hutchinson, hence the term Hutchinson's teeth. Ulceration may occur in the throat and mouth and may continue to spread until the palate is literally eaten away. Hydrocephalus and other distortions of the head are often directly traceable to this disease. Infected children have feeble digestions; they often suffer with malnutrition. Frequently this is so pronounced that it terminates life in a few months. Inherited syphilis sometimes involves the brain, causing idiocy and paralysis. The liver is often enlarged. Acute nephritis resulting from inherited syphilis may be present and may end in death.

Treatment:

This is local and constitutional. Anti-syphilitic treatment is of the utmost importance, as complete blindness may ensue if the condition is not checked. The yellow oxide of mercury ointment applied locally is of service. Atropine is to be instilled to quell, or to prevent, ciliary involvement. The eyes are to be shaded from the light by dark glasses, as the photophobia is one of the most distressing symptoms of the disease. Dionin in five per cent. solution is valuable in allaying the immediate symptoms, and it also helps to bring about reabsorption of the corneal opacities.

The following formulæ will be found valuable in controlling the disease.

℞.	Hydrarg. chlor. corros.,	gr. ⅛
	Ammonii chloridi,	gr. v
	Tinct. belladonnae,	gtts. x
	Aquae destillatae, q. s. ad.	oz. i

M. Sig:— Drop in eye 3 times a day.

℞.	Hydrargyri oxidi flavi,	gr. ii
	Petrolat.,	oz. vi

M. Sig:— Apply to cornea in interstitial keratitis.

℞.	Daturinae sulphitis,	gr. i
	Hydrargyri oxidi flavi,	gr. x
	Petrolat.,	oz. i

M. Sig:— Used throughout course of interstitial keratitis.

Hypopyon (Hypopyon Keratitis)

Pus in the anterior chamber is a frequent complication of penetrating wounds of the cornea, or it may be a direct sequence to the invasion of the aqueous by the pathogenic organisms of deep keratitis or corneal ulcer, as a result of metastasis. It is particularly liable to occur in ulcers of the serpiginous type. Occasionally it is seen in cases of severe iritis and more frequently in cyclitis.

Treatment:

The treatment consists in combatting the infection responsible for the pus formation. An incision in the cornea, for the purpose of evacuating the pus, is of doubtful value, except when the hypopion is due to accidental penetration of the cornea, in which case an incision may be beneficial. Schinck has extensively applied the ultra

violet ray in hypopyon and has reported forty-eight cases of either recovery or improvement from its use.

Two excellent formulæ in this disease are the following:

℞.	Atropine sulph	gr. ii
	Dionin,	gr. v
	Aqua dest. q. s. ad.,	oz. i

M. Sig:— Drop in eye every three hours.

℞.	Acidi borici.,	gr. xl
	Zinci chloridi.,	gr. xx
	Zinci sulphocarbolat.,	gr. xxx
	Aqua dest. q. s. ad.,	oz. vi

M. Sig:— Douche eye every 3 hours in penetrating wounds of cornea with hypopion.

Cysticercus in the Vitreous

This is a rare condition. It is usually found among those whose meat supply consists chiefly of pork. Evidently the parasite is carried by the blood stream and is deposited between the choroid and the retina. Later it penetrates the retina and, before the media becomes cloudy it may be seen by the opthalmoscope freely floating in the vitreous. If it is not removed the eye soon becomes inflamed and the vision is lost. Later a phthisis bulbi results and unless the parasite dies and is absorbed, the eye will have to be enucleated.

Treatment:

In a very few cases on record the parasite has been successfully removed and vision retained. There is no medical treatment.

Pannus (Vascular Keratitis)

One of the most common, and at the same time the most intractable, complications of trachoma is pannus. This is described by Fuchs as a development of trachomatous material upon or between the layers of the cornea. Other authors believe it to be due to the scar tissue of the conjunctiva and to inturned lashes, which brush the cornea, and form pressure. Pannus will very often clear up with the disappearance of the granulations; but if the scar tissue is dense in the conjunctiva of the upper lid and the tarsal cartilage curved so as to cause trichiasis, the pannus may continue until the cornea becomes dense and opaque. When entropion exists it must be remedied by an operation, for the vascularity of the cornea will continue until a leucoma is formed, if this is not done. This condition is irreparable.

Treatment:

An efficacious means of controlling vascular pannus lies in the operation of peritomy, an excision of a crescentic piece of conjunctiva from around the upper portion of the cornea. Enough conjunctiva should be removed to prevent the edges from uniting. Whether pannus is due to an extension of the trachoma to the cornea, as some authors claim, or to pressure and irritation alone, this method of treatment meets the indication. On the one hand we get a starving out of the blood-vessels of the cornea and on the other a dense scar tissue wall through which the micro-organisms cannot pass.

If there is much thickening of the lid with a consequent pressure on the cornea, a canthoplasty should be

done. My experience with this operation, though not extensive, has made me look upon it with favor.

The condition is often relieved by one of the following:

℞.	Atropine sulph.,	gr. ¼
	Zinci sulphatis,	gr. i
	Morphinae sulph.,	gr. ii
	Aquae rosae,	oz. i

M. Sig:— To be dropped in eye 3 or 4 times a day.

℞.	Hydrarg. oxidi flavi,	gr. i
	Lanolini,	dr. ii
	Petrolati albi,	dr. vi

M. Sig:— Insert between lids 3 times a day.

℞.	Syr. ferri iodidi,	oz. iii

Sig:— Fifteen drops in water after meals, gradually increasing till 20 or 30 drops are reached.

Ulcers of the Cornea (Suppurative Keratitis)

Extensive ulcers are not an uncommon sequel to abrasions of the cornea. The infection is usually carried into the corneal wound by the foreign body itself or by the attempts of the patient or his friends to get the intruding particle out of the eye. When these ulcers occur, the eye should be kept quiet with atropine and be irrigated frequently with a boric acid solution. If the ulcers show a tendency to creep, or are deep and sluggish, they may be lightly touched with carbolic acid on a probe. A pressure bandage is often of service. If this is not employed, the eye should be protected from the light by other means.

Treatment:

In corneal ulcers complicating trachoma, the treatment, to secure the best results, should be directed toward removing the conjunctival trouble which produces them. In other respects, the treatment is the same as is applicable to other corneal ulcers, with the exception that bandages should not be applied to the eye, as they obstruct the free exit of discharge. When iritis is present, a 1 per cent. solution of atropine should be instilled in the eye once a day, or oftener, if the condition demands it.

The following prescriptions are indicated:

℞. Atropinae sulphatis, gr. i
Aquae destillatae, oz. i
M. Sig:— Drop in the eye every four hours in acute ulcerative keratitis.

℞. Eserine salicylate, gr. ½
Aquae destillatae, oz. i
M. Sig:— Drop in the eye four times daily when the ulceration is peripheral.

Episcleritis

Episcleritis consists of an inflammation of the deeper tissues covering the sclera. It is probable that the inflammation often involves the sclera also, though this is a theory difficult of demonstration. The disease presents itself as a patch of infiltration of the conjunctiva, appearing about two millimeters from the sclera-corneal margin. The affected area is of a darker hue than is found in other conjunctival inflammations. There is usually considerable

swelling of the conjunctiva which, as it subsides, leaves a slatey color which may remain as a permanent disfigurement. There is very little pain associated with the condition but lacrymation and photophobia may persist throughout the course of the disease.

The disease may run a prolonged course, often occupying months, during which time periods of improvement and exacerbations follow each other with definite regularity. The condition formerly was thought to be due to gout or rheumatism; now it is known to be a direct result of infection of teeth, tonsils, gall bladder or some other like focus, or it may be a symptom of late lues.

Treatment:

The cause of the disease must be sought for and removed. Infected tonsils and carious teeth which harbor alveolar abscesses should be removed. The gall bladder should be examined by one competent to determine whether or not disease of the biliary tract exists. Salicylate of soda has been a much used remedy in episcleritis. The beneficial results supposed to have been obtained in the past by those administering the drug are now under question however. Potassium iodide has been a favorite remedy and though its administration is impirical it is still prescribed to apparently good advantage. Some have advocated multiple incisions through the inflamed conjunctiva for the purpose of liberating blood from the engorged areas. Hot fomentations are well borne and apparently are helpful. Careful attention should be given to the general health. Locally mild collyriums containing borax, the bicarbonate of soda or boric acid, seem to have a palliative effect upon the disease.

Scleritis

This deep inflammation of the sclera is usually followed by an exudate which is not absorbed for weeks or even months. There is, however, little tendency to breaking down of tissue, the involved area generally subsiding by absorption. Frequently the condition is a painful one, because of the accompanying keratitis, or iritis, or both. Formerly gout and rheumatism were thought to be the only causes of the disease; now it is known that it is often of syphilitic origin.

Treatment:

This should, of course, be directed toward the causative factor in the disease. Infected teeth and tonsils should be removed. If the condition is due to syphilis, inherited or acquired, vigorous antiluetic treatment should be instituted. In impoverished children the diet should consist of nourishing foods, such as eggs and milk. For "strumous" cases the syrup of the iodide of iron is beneficial. Locally, hot fomentations are well born and are indicated when iritis is a complication. Atropine is to be instilled into the eye to promote cyclopegia, but must not be used often enough to cause a conjunctivitis.

Two serviceable formulae appear below:

℞.	Hydrarg. oxidi rub.,	gr. v
	Vaselini,	oz. i
M. Sig:—	Use as eye ointment once or twice daily.	

℞.	Ung. hydrarg. nitrat.,	gr. x
	Cocainae hydrochlorat.,	gr. v
	Vaselini albi,	oz. i
M. Sig:—	Put between lids at night.	

Acute Glaucoma

The disease is usually ushered in with pain, which radiates along the branches of the fifth nerve. Though this is an almost constant symptom, it is more or less misleading, for we often have described to us a similar pain in corneal ulcer and iritis. It is well to remember that the pain in corneal ulcer and iritis is more periodic than in glaucoma, and in iritis is worse during the early morning hours.

An examination of the globe elicits an increase in tension. This is characteristic and should be sought for in all inflamed eyes. It may vary all the way from stony hardness to a little more than usual resistance under palpation. In conjunctivitis there is no change in intraocular tension and in iritis the tension is usually unaltered.

In glaucoma the iris is pushed forward, sometimes almost obliterating the anterior chamber. This occurs in no other acute eye disease. The pupil is contracted in iritis and in conjunctivitis it is not affected. A good point in diagnosis is the insensibility of the cornea. In nearly all cases it may be touched without the least sensation being produced. In no other condition, where some form of paralysis does not exist, is this symptom found. The cornea has a steamy appearance and looks like glass that has been breathed upon. In iritis the cornea is sometimes hazy, but the haziness is due to its posterior surface being studded with deposits. This can easily be differentiated. The appearances of the cornea in the two conditions are never alike. There is usually profuse lacrymation but the secretion is clear and causes no gluing together of the lids in the morning as is the case in conjunctivitis. The injection in glaucoma is

general but usually superficial. In iritis it is pericorneal and deep.

In addition to these points in diagnosis, it is well to remember that in glaucoma and iritis one eye only is affected as a rule, and that in conjunctivitis both eyes are almost always attacked simultaneously, also that conjunctivitis is common at all ages, that glaucoma seldom occurs before the fortieth year, and that iritis is rarely seen in childhood.

Treatment:

In nearly all cases of glaucoma operative interference is indicated, and after the diagnosis is made, the general practitioner usually turns to the specialist for help, but sometimes circumstances make immediate operation impossible, and some form of treatment must be instituted. In this work only the general principles of non-operative treatment will be dealt with.

In the non-operative treatment both local and general measures should be employed. Under the local treatment the first essential is contraction of the pupil. Eserin is the most reliable and satisfactory drug for this purpose, and is usually applied in the strength of two grains to the ounce of distilled water. In addition to the use of eserin hot fomentations should be applied to the temple. Morphin may be necessary for relief of pain. It is not intended that this line of treatment should be looked upon as curative in glaucoma cases. These steps should be taken however, with a view to relieving the tension and allaying the symptoms till an iridectomy can be performed.

The following combinations are very helpful:

℞.	Eserinae salicylate,	gr. ss
	Aquae destillatae, s. q. ad.	oz. i

M. Sig:— Drop in eye every three hours.

℞.	Pilocarpinae hydrochlor.,	gr. ii
	Aquae, q. s. ad.	oz. i

M. Sig:— Drop in eye once daily.

Iritis

This condition is often secondary to some localized focus of infection, such as teeth or tonsils. Also it may be due to trauma or to an extension of an inflammation from surrounding structures. It is a very serious condition and its presence, if undiagnosed and untreated, usually leads to either partial or complete loss of vision, this unfortunate termination being due to the formation of adhesions between the margin of the iris and the anterior capsule of the lens. The disease is ushered in by a hyperemia of the pericorneal zone, which extends not more than two or three millimeters from the cornea, and looks like a pale red band surrounding this structure.

There are present photophobia, lacrymation, tenderness, and pain. This latter symptom is usually most severe during the early morning hours. The pupil is contracted, immobile, and irregular in contour, and the iris has a greyish, muddy appearance, with its markings diminished or entirely obliterated. The cornea is often hazy and has the appearance of glass that has been breathed upon. Naturally there is a diminution in vision. In advanced cases pus may form in the anterior chamber. The disease may be acute or chronic. One attack predisposes to another.

The following table may not be amiss in giving the points between glaucoma, iritis and conjunctivitis:

Glaucoma	*Iritis*	*Conjunctivitis*
Pupil dilated.	Pupil contracted.	Pupil unaffected
Patient usually over 45 years old.	Usually under 45 years.	Occurs at all ages.
Tension always increases.	Tension seldom increases.	Tension never increases.
Anterior chamber shallow.	Anterior chamber normal.	Anterior chamber normal.
Cornea anesthetic.	Not so.	Not so.
Lids do not glue together.	Lids may glue together.	Lids glue together.
Injection general but superficial.	Injection pericorneal, but deep.	General injection.

Treatment:

In inflammation of the iris, atropia sulphate is the greatest of all remedies. Its use greatly diminishes the blood supply of the iris and lessens infiltration. By narrowing this structure the blood is literally squeezed out of it; moreover, by dilating the pupil, iritic adhesions are prevented from forming. The action of the drug is said to be accentuated by the addition of cocaine; though the prolonged use of this drug is to be avoided, as it lowers the nutrition of the cornea and predisposes to ulceration. When mydriasis is once accomplished, there is diminution in the symptoms, the pain especially being very much abated.

Hot fomentations lend a sense of relief and are to be applied for fifteen or twenty minutes during each hour. Sub-conjunctival injections of normal salt solu-

tion are said to be of benefit. During the last three or four years biniodide of mercury injections have been tried, but this drug often causes severe pain and it is doubtful if its use is of any value. Foci of infections are to be sought for and removed. The iodides are usually of service; especially is this true, if the condition is of luetic origin. When syphilis has been demonstrated by the Wasserman test, or when its history can be obtained, vigorous treatment directed toward its cure must be instituted.

The combinations below are used to much advantage:

℞.	Atropinae sulphatis,	gr. i
	Cocainae hydrochlor.,	gr. ii
	Adrenalin,	dr. i
	Aquae, q. s. ad.	oz. i

M. Sig:— One drop in eyes every three or four hours.

℞.	Ung. hydrargyri,	oz. ii
	Ext. belladonnae,	gr. xx

M. Sig:— Rub over temples to relieve severe pain of iritis.

℞.	Scopolaminae,	gr. i
	Aquae destillatae,	oz. i

M. Sig:— Drop in eye morning and night when adhesions are present.

Postoperative Iritis

This may present itself from the third to the tenth day following a cataract extraction. The initial symptom is pain, severe and lacerating, but periodic. It is usually very pronounced during the early morning hours. The iris becomes swollen and the pupil shows a tendency

to contract. The cornea has a hazy appearance, due to its posterior surface being studded with deposits. There is deep pericorneal injection and a very profuse lachrymation.

Treatment:

The treament of this condition should be both local and systemic. Free purgation should be instituted and the salicylates should be administered. Hot applications should be applied to the eye and a one per cent., or stronger solution of atropine, should be dropped in the eye four or five times a day. The patient should be kept in bed.

Traumatic Iritis

Traumatic iritis may result from blows, punctured or incised wounds, foreign bodies in the cornea, or from any extensive wound involving the iris itself. Usually the symptoms appear immediately after the injury. There is pain of an intense character which radiates along the branches of the fifth nerve. This is aggravated by light and is usually worse during the early morning hours. The iris has a muddy appearance, and if it is not torn the pupil contracts to a point, does not respond to light and is not readily influenced by mydriatics, as a plastic exudate glues the iris to the anterior capsule of the lens. The cornea is hazy; there is a deep peri-corneal injection and vision is markedly interfered with.

Treatment:

In the treatment of this condition the first essential is dilation of the pupil. If the iris is adhered to the anterior capsule, this is not always easy to accomplish.

Atropine, two or three grains to the ounce, may be instilled every half hour until the adhesions are broken up and the pupil dilated. The toxic effect of the drug can be prevented by pressure with the finger over the lacrymal passages for a minute or two after dropping it into the eye. Cloths wrung out in hot sterile water should be applied as they aid greatly in relieving the pain, though opiates may have to be resorted to. If a wound of the cornea or sclera exists the eye should be irrigated with a saturated solution of boric acid every hour or two.

The following prescriptions give excellent results:

℞. Duboisiae sulphatis, gr. i
Aquae destillatae, oz. i
M. Sig:— Drop into eye once or twice daily in acute stages.

℞. Atropinae sulphatis, gr. ii
Aquae destillatae, oz. i
M. Sig:— Drop in eye two or three times daily in traumatic iritis.

Hysterical Amblyopia

This is met with most frequently in over-worked school children. The reason for this is simple: the child's brain in action uses up a portion of its tissues, which must be removed and replaced as fast as used up, if its equilibrium is to be maintained. This balance can be kept up only when plenty of time for rest and sleep is given. When the brain is "crammed" with intellectual work, and when insufficient time is given for the removal of brain waste and for brain repair, the nervous system suffers and the seeds are sown for a full harvest of nervous disorders. The condition frequently sets in imme-

diately after a very great shock, sorrow, or other emotional excitement is experienced by the subject. It may be of long duration or may clear up suddenly.

Treatment:

The treatment is principally psychic. A change of environment generally is beneficial. Hysteria, like other nervous diseases, is caused by destructive changes in the brain, and the cause of these changes should be sought for and eliminated. In many cases the abnormalities will be found dependent upon the evils of our modern artificial civilization. An attempt to squeeze the brain into the particular shape fashioned by a school curriculum often ends in an attack of hysteria.

The term "overpressure" at school seems to have been formed with the idea that a certain amount of pressure at school is indicated. This is all wrong. Education should be a natural process; children should be as well from a physical standpoint at the end of the term as they are at the beginning. If they are taught to observe the fundamental laws of health during the school year, if the education is carried on with a view to growth and not pressure, if the system is one of drawing out and not crowding in, the process is a natural one, and the various nervous disorders and physical disturbances will be eliminated.

The greatest danger is not immediate but remote. The symptoms indicate a disturbed mental equilibrium. A physician should at once regulate the treatment and discipline of the child, which treatment will have in view the eradication of predisposing causes. The future of this class, more than any other class of children, depends

upon proper management, and only by such judicious management will many a child be spared from becoming a resident of a hospital for the insane, later in life. Everything possible to produce mental quietude and a normal state of mind should be done for the patient. Various tonic treatments have been recommended.

Excellent results may be expected from the use of the following:

℞.	Syr. ferri iodid.	oz. i
Sig:—	Fifteen drops in water after meals for a child of ten years.	

℞.	Tr. asafoetida,	oz. ss
	Tr. valerian ammon.,	oz. i
	Elix. lactat pepsin, q. s. ad.	oz. v
M. Sig:—	Teaspoonful in water after meals. Dose for child of ten years.	

Congenital Amblyopia

This condition when unilateral and not pronounced, as it usually is, may escape the observation of the child's parents till he begins to concentrate his vision upon small objects; or it may go unnoticed until the defect is accidentally discovered at school. In higher degrees of amblyopia, with associated nystagmus, the abnormality is classified with the congenital amblyopias. It may also be traced to some mild cerebral disturbances occurring after birth, which have cleared up. In both these types of amblyopia the prognosis is not favorable, though something in the way of benefit may be done by correctly fitted lenses.

Tobacco Amblyopia

A peculiarity about this disease is that the field of vision is not restricted, the condition being characterized by a central scotoma, or blurred spot, in the center of the field of vision. It usually occurs in men, after forty-five, who have been inveterate smokers for years. The poison generated from tobacco smoke seems to be cumulative in effect, these amblyopia cases often giving a history of not having increased their accustomed supply of tobacco for years. It is said to be oftenest met with in men who have been habituated to smoking before breakfast. This has led some to the belief that the poisons responsible for the disease are swallowed with the saliva, though it is a fact often observed that tobacco chewers are seldom affected.

Treatment:

The treatment consists first in giving up the use of tobacco in all its forms, if this be possible for the patient, or at least in materially diminishing the amount accustomed to. The disease is very obstinate, the poison seeming to take as long for its elimination as it did for its accumulation. Many months may elapse, with the patient under the most conscientious discipline, before any material improvement is noticed. In some cases the condition seems to be chronic. Medical treatment offers very little relief, if any. Nux vomica, among other drugs, has been used, however, with reported beneficial results. Attention must be given to the general health of the patient.

The following formulæ will be found useful:

℞. Tr. nux vomica oz. i
Sig:— Fifteen drops in water after meals.

℞.	Tr. opii,	drs. iv
	Tr. belladonnae,	drs. iii
	Tr. arnicae,	oz. i
	Aqua dest. q. s. ad.	oz. xii

M. Sig:— Apply hot, with compresses, to eyes.

Quinine Amblyopia

This form of partial blindness is not uncommon in the malarial district of the South. The symptom presents itself during the process of cinchonization and is said by Fuchs to be due to a destruction of the ganglion cells of the retina. It is more probable, according to some authors, that the poison is exerted upon the brain, diminution of the vision being secondary. This theory is rather substantiated by the fact that a temporary, or even a permanent deafness, may occur coincident with the amblyopic symptoms.

Treatment:

A discontinuation of the drug and brisk elimination are the indications for treatment. Strychnia and arsenic have been very generally given in this disease.

Methyl-alcohol Amblyopia

Since the advent of National Prohibition this has been a very common disease. When methyl-alcohol is taken by the stomach, it does not cause immediate death; it is apt to interfere with vision, or to produce complete blindness. Usually there is a temporary improvement after amaurosis presents itself, but this is soon followed by a lapse into the former condition as the atrophy of the optic nerve progresses. The cases I have observed have at first shown manifestations of cupping of the optic

disc, which were soon followed by a blanching of the nerve head. In one case the atrophy was complete in less than a month, this patient having been entirely blind since the fatal evening of his indulgence in the wood alcohol.

Treatment:

Immediate elimination by every avenue is indicated. Pilocarpin should be administered for its effect upon the sweat glands. Urotropin is said to be a valuable remedy. Strychnia has been administered with reported favorable results.

Amblyopia from Loss of Blood

This is due to anemia of the brain centers of vision, from severe hemorrhage, and it is a symptom which nearly every obstetrician of experience has at sometime been unfortunate enough to encounter, as it is frequently associated with post-partum hemorrhage. The condition requires no treatment and clears up spontaneously as the patient recovers.

Strabismus (Squint)

In neglected cases of "far sight," strabismus or crossed eyes is apt to result. It seems to be a law of nature that the more the ciliary muscle is needed in "accommodation" the more convergence occurs to the eye. A very strong impulse is given to turn the eye in when "far sight" exists. In cases of this character the drawing in of the recti muscles goes on until the child develops double vision. When he looks at one object, two objects are seen. Eventually he learns to disregard one object. In other words

he finds, unconsciously to himself, that he can see better with one eye than with two, and the crossed eye follows the course of least resistance which is a turning inward toward the nose.

The majority of unused eyes go wholly or partially blind; besides the eye in use is subjected to twice its normal work very much to the detriment of its possessor. In children who have reached the age of twelve or fourteen years an operation usually has to be done, a fact which intensifies the importance of correcting this defect earlier in life when well fitted lenses are usually all that is necessary.

Treatment:

All physicians know that errors of refraction are responsible for the largest per cent. of squint cases, and that properly fitted glasses will, in a large majority of cases, correct the deviation of the squinting eye without having to resort to a cutting or advancement of the muscles. It is not so well known, however, that these cases should be corrected as early in life as possible, even as young as three or four years, for the squinting eye, if neglected, usually becomes amblyopic from disuse. The physician has not done his duty, unless he insists upon a correction of these cases before such disastrous results are obtained.

Asthenopia (Eye Headache).

The medical profession, generally, is beginning to realize that eye-strain is often responsible for persistent headaches, and many other reflex disturbances, and that a person who is so unfortunate as to have an error of

refraction is apt to be depressed and nervous, due to a constant leakage of nerve energy. In neurasthenic patients with a long list of nervous ills, the condition of the refraction should be carefully looked into without delay.

Treatment:

When once established, there is only one remedy for these errors of refraction, and that is correctly fitted lenses. It is true that the patient will learn to depend upon them, but there is no reason why he should be denied them any more than a child with a tuberculous spine should be denied a brace, which gives him support and relieves his pain. What he saves in wasted nervous energy, with all the physical ills incident to it, will more than compensate him for the trouble his glasses will cause him.

The following prescriptions are unusually efficient in temporarily controlling the discomfort.

℞.	Phosphori,	gr. ½
	Alcoholis, q. s. ad. Solv.	
	Spt. menthae piperitae,	oz. iii
	Glycerini, q. s. ad.	oz. viii

M. Sig:— A teasp. after each meal in a little water.

℞.	Mentholi,	gr. x
	Cocainae hydrochlor,	gr. x
	Chloralis, hydratis,	gr. x
	Vaselini,	oz. i

M. Ft. ung.

M. Sig:— For local use: Apply to temples for relief of asthenopia.

Congenital Cataract

A slight haziness of the lens may be entirely overlooked in infancy, the disturbance of vision which it causes being attributed to "near sight." It is only after the child begins to read that the defect manifests itself. A small per cent. of cataractous children are born with their lenticular opacities complete. These opacities may be capsular or nuclear. More frequently the opacities are partial, the child reaching puberty before the state of even partial blindness is reached.

The diagnosis of juvenile cataract is based upon the same clinical observations that apply to the senile variety. The lens, however, may have a hue different from the mature type and may present a bluish-white rather than a grey appearance.

Treatment:

In cases of juvenile cataract, when little interference with vision occurs, the child may be fitted with lenses correcting refractive errors, and the case may be let alone. If there is much disturbance of vision, operation is indicated. This is performed by puncturing the lens and admitting the aqueous humor to it. By the macerating influence of the aqueous, the lens tissue rapidly disintegrates and disappears. Before attempting this operation the pupil should be widely dilated with atropin. The patient must be under a general anesthetic.

Frequently flocculent portions of the lens may escape into the anterior chamber, where they are usually absorbed without any disturbance. In rare instances, however, lens material in the anterior chamber may give rise to violent symptoms of pain, inflammation, and vomiting.

When this unfortunate condition is met with, the cornea must be incised and the lens material swept out in much the same way that the cortex is removed following an extraction of senile cataract.

Absorption of Immature Cataracts

An example of what may be called herd psychology may be found in the pandemic cyanide of mercury injections for the absorption of immature cataract, an operation to which hundreds of patients have already been subjected without there having been a single authenticated case of cataract having thus been absorbed, or more than a theoretical justification for subjecting a patient to this procedure. A well-known pharmaceutical firm has long had on the market a preparation for the restoration to normal of the partially opaque lens, and though their claims are supported by over one hundred American ophthalmologists, the results cited by these observers are entirely too extravagant to be accepted as truth. It is possible that a corneal cloudiness resulting from long continued inflammatory disease of the eye may clear up spontaneously as the inflammation subsides, or that a slight haziness of the lens resulting from diabetes may disappear while the patient is under observation, and this fact, no doubt, has led several conscientious physicians to believe that a partially developed senile cataract has been cured.

Senile Cataract

The term cataract is used to designate several types of opacities of the crystalline lens and its capsule.

All senile cataracts may be roughly divided into corti-

cal cataracts, a cloudiness or loss of transparency of the cortex of the lens, and nuclear cataracts, a hardening of the nucleus of the lens with opacity.

In the cortical variety the substance of the lens surrounding the nucleus becomes opaque. This type of cataract is the one usually found in the individual under sixty years of age. The older the patient is before cataract begins the more liable he is to the central or nuclear type. Cortical cataract is a partially opaque cortex, through which the nucleus may be seen with the ophthalmoscope as a dense yellow spot. As ripening progresses the cortex may shrink materially, the nucleus having the appearance of being surrounded by a heavy veil. At this stage the lens is said to be over ripe, and the patient sometimes notices he sees slightly better than formerly, this being due to the fact that light rays are penetrating the cortex. A very marked difference may occur in the nature of the lenses in the same individual. I have observed a number of times a cortical and a nuclear cataract in the same patient.

In very rare instances the nucleus moves about in the cortex, a condition known as Morgagnian cataract. In this variety of cataract an unusual optical phenomenon may be observed. The patient may see large objects remarkably well for a few moments at a time, this brief period being followed by the usual obscuration of vision.

Sometimes the process of ripening of senile cataract is accentuated by a too rapid abstraction of the fluid of the lens substance and a diminution of its supply, which interferes with its nutrition and transparency. This absorption of the lens substance may be followed by deposits of phosphates or carbonates of lime within the substance

of the lens and the establishment of calcareous cataract. These deposits early prevent the admission of light rays and, as in the case of black deposits in the lens, may interfere materially with diagnosis. Senile lenticular cataracts begin as a cloudiness of the lens structure in which changes in density and color are abnormally progressive. At first there seems to be but slight alteration of the substance of the lens. Much light is admitted to the eye and there may be for years little embarrassment to vision. Usually the nucleus of the lens is the first to become thoroughly opaque.

Treatment:

With the exception of correcting lenses and due precaution against using the eyes beyond the period of fatigue there is probably nothing else to be done toward mitigating, in any way, the progress of true senile cataract. The treatment is essentially surgical and consists in the extraction of the opaque crystalline lens.

Unless the circumstances are unusual only one eye should be operated upon at a sitting, even if both cataracts are ripe.

Aphakia

Removal of the crystalline lens produces a result which is technically known as aphakia, and which can be corrected only by convex lenses. Providing that the patient has not previously been myopic, ten or more diopters correction will usually be necessary. In addition to the high degree of aphakic hyperopia an astigmatism of three or four diopters, "against the rule" is apt to be present. The eyes should not be fitted, however, until all symp-

toms associated with the extraction are absent. The patient should be provided with two pairs of glasses; one pair for distance and a pair for reading which usually must be three diopters or more in advance of his distance correction.

Traumatic Cataract

Injuries to the crystalline lens from penetrating wounds resulting from sharp instruments are usually attended with pain, swelling and photophobia. If these symptoms subside, without infection of the wound and loss of the eye, a cataract results. Following a rupture of the capsule a cataract may develop without any untoward symptoms, and the vision may be lost for weeks or even months before the cataract is discovered.

Trauma to the lens occurring in adult life is of greater significance than similar accidents among juveniles. If the lens is severely injured glaucomatous symptoms may present themselves in a few hours, giving rise to the necessity for operation.

Treatment:

In children with traumatic cataract, solution often takes place, this being due to the disintegrative action of the aqueous upon lens tissue. The greater the rent in the capsule and the younger the patient, the more rapid will be the absorption of the lens. In young children whose lens capsules have been injured, but who have not suffered a penetrating wound of the globe, nothing should be done to the eye except to dilate the pupil. When the rupture of the capsule is associated with a penetrating wound from some sharp instrument, in ad-

dition to the atropinization, the eye should be sterilized and dressed.

Secondary Cataract

In a great portion of cases in which a cataract has been removed a later operation upon the capsule will be found necessary. Fox states that when capsulotomy has not been performed at the time of extraction of the cataractous lens, at least twenty-five per cent. of cases will develop opacities in the remaining capsule. The percentage of these cases will be found to depend largely upon the degree of maturity of the extracted lens, and the amount of cortical matter that was left behind at the time the lens was delivered. If much lens matter has been allowed to remain in the anterior chamber secondary cataract may be looked for in almost every case.

Treatment:

A number of surgical methods have been devised for attaining increased acuity of vision in cases of after cataract. Of these discission, or the cutting operation, is most in vogue, due to the ease with which it is accomplished, and because of the comparative safety attending its performance. In this operation the knife needle should be used, for the capsule must be clearly incised without any unnecessary dragging upon the ciliary muscle. The pupil should be thoroughly dilated, the eye cocainized and the knife needle inserted at the limbus, the exact point of entrance to be governed by the character and density of the capsule. After the instrument enters the anterior chamber it should be carried obliquely inward to a point as far opposite to its point of entrance as

the iris will permit. Its cutting edge is then directed toward the point of entrance so that in raising the handle it will cut its way through the membrane. If the cut is clearly made, and if it is sufficiently long, the elasticity with which the capsule is endowed will cause it to gape, thereby creating a permanent opening in the capsule.

Foreign Bodies in the Anterior Chamber

A foreign body entering the eye through the cornea and lodging in the anterior chamber is not a very formidable accident, for if the iris is not wounded there will be no hemorrhage and the intruding particle will be seen plainly. It is then not a difficult matter to make an incision through the cornea with a keratome, or cataract knife, insert a slender pair of iris forceps and remove it. I have succeeded in accomplishing this in two cases.

Should there be hemorrhage into the anterior chamber the position of the foreign body cannot be ascertained without the X-ray, as the surgeon has no means of determining whether it has passed through the iris or not.

Treatment:

After the foreign body is localized by the skiagram, the cornea may be incised and the chamber gently irrigated, after which it is often possible to see the intruding fragment and to remove it with the iris forceps in the manner just described. In some instances particles of steel have been withdrawn by the magnet, from the anterior chamber, through the opening made by their entrance, but I believe it is better surgery, if the magnet is to be used, to disregard the original opening and to

make a new incision in the cornea before attempting the removal of a foreign body from this location.

Foreign Bodies in the Posterior Chamber

A foreign substance in the posterior chamber offers us a very hopeless result without the aid of a good localizer. It is true that it may be seen through the fluroscope, and may be skiagraphed, but this is of little service because the eyes in different subjects are fixed at different positions in the orbital fat. Simpson has noted, in ten adults of about the same age, height and weight, a variation of nine millimeters from the perpendicular plain of the orbit to the anterior surface of the cornea. Because of this fact that there is no reliable way of estimating the exact position the eye occupies in the orbit, some one of the various methods for localization should be used in making the skiagram. Of these there are many.

Recently I have devised a localizer which, from the standpoint of efficiency and simplicity, is, in my opinion, preferable to any thus far demonstrated. It consists of one-half of a ring adjusted by a head band so that it fits snugly to the perpendicular axis of the anterior surface of the eye ball. It is applied external to the lid. After oiling the skin the ease with which the device may be applied and adjusted so as to cover all of the anterior hemisphere of the globe is truly surprising. After its adjustment the picture is made with the patient's head in the lateral position. To the head band is now attached a circular band twenty-six millimeters in circumference, which is adjusted with its center directly in front of the pupil. A picture is now made antero-posteriorly.

While some latitude must be allowed for a slight variation of the eye from the average size, this method, as a whole, gives results remarkably accurate. Besides giving reliably the position of the foreign body, the instrument does not cause the patient pain nor, as in other localizers, particularly the one devised by Fox, is it possible for the foreign body to be obscured by shadows thrown from the instrument itself.

Treatment:

After the removal of a foreign body I have always irrigated the cul de sac with a weak bichloride solution, instilled atropine and applied a snugly fitting bandage. These dressings have not been removed inside of eighteen hours. If pus was then found in the anterior chamber, I have incised the cornea and gently irrigated with normal salt solution. Infection of the vitreous, to my mind, always means loss of the eye, though Haab has inserted sticks of iodoform into the posterior chamber to check vitreous infection and has reported successes from this line of treatment.

Burns of the Cornea

In corneal burns the degree of damage to vision will depend upon the location and extent of the injury. If this is slight the portion of the cornea involved is soon replaced with new epithelium and a slight haziness only remains. If this cloudiness is not central no real harm results. When the burn is deep an extensive necrosis of the corneal tissue occurs, which leaves a permanent scar upon healing.

Treatment:

The treatment of these cases is based on general principles. When the injury is due to chemicals, an effort should be made to neutralize them. If from acids, a weak solution of bicarbonate of potash or soda should be instilled. When caused by alkalies a mixture of lemon juice and water may be used. Lime burns are very common among stone masons and plasterers. These injuries are very destructive to vision, and when such an accident takes place no time should be lost in removing the lime and irrigating the eye with a weak solution of vinegar, after which olive oil should be instilled. In all these cases cold compresses allay the inflammation and are very grateful to the patient. Weak solutions of atropine are indicated in all cases under forty-five years of age. After that time they should be used with caution, as drugs which dilate the pupil predispose to glaucoma in the old.

Two satisfactory formulæ are the following:

℞.	Cocain. hydrochlor.,	gr. i
	Adrenalin (1:1,000) solution,	dr. i
	Aqua dest.	oz. i

M. Sig:— One drop locally every two hours.

℞.	Hydrarg chlor. mite	gr. x
	Liq. petrolati,	oz. i

M. Sig:— Shake and drop between lids 3 or 4 times a day.

Blood in the Anterior Chamber

A collection of blood is seen not infrequently in the anterior chamber after the eye has been injured by a blow. This may occur without the sclera or cornea having been incised, and is usually due to a rupture of the

iris. The blood is nearly always absorbed in time, and if the lens capsule is not ruptured, the vision returns. Nature is the best physician in these cases, for, with the exception of cold compresses and an atropine solution, no treatment is of value.

The following is the atropine solution indicated:

Atropin sulphate,	gr. i
Sodii biboras,	gr. x
Aquae dest.	oz. i

M. Sig:— Drop in eye 4 times a day.

Symblepharon

Some cases are congenital. In this abnormal condition, whether it be due to the union of the mucous surfaces from trauma or to a congenital defect, the lesion is usually from the lower lid to the eye ball. Resulting from this deformity there is much limitation of the movements of the eye, and double vision may ensue. The contraction of scar tissue, if the condition be due to trauma, may cause a pronounced entropion.

Panopthalmitis

This term applies to a violent inflammation of the whole eye ball, which is usually the result of a penetrating wound that has become infected. Its presence is evidenced by great chemosis of the conjunctiva, a rapid infiltration of the globe with pus, and pain of an intense character. If the eye is not enucleated the condition usually progresses until a cellulitis of the orbit results, which may be so pronounced as to push the globe entirely out of the orbit. Rupture of the eye ball occurs almost

always late in the course of the disease, after which the eye rapidly shrinks.

Treatment:

Pending enucleation, the patient is to be kept as comfortable as possible by the administration of opiates. Hot fomentations are often of service in mitigating the pain. Tonics and local sedatives are recommended, but their use is of little value; for when this condition is in existence, the removal of the globe cannot be performed too soon. If this measure is neglected, sympathetic inflammation of the other eye, with complete blindness, is a possible complication.

Two serviceable combinations for the relief of pain are as follows:

℞.	Cocain hydrochlor.,	gr. i
	Adrenalin, (1:1,000)	dr. i
	Sol. mercuris cyanid (1:3,000)	oz. iii

M. Sig:— To be used as an analgesic.

℞.	Dionin,	gr. i
	Cocain hydrochlorat.,	gr. i
	Sol. mercuric cyanid, 1 per cent.	oz. iii

M. Sig:— One drop in the affected eye every hour for pain.

Penetrating Wounds of the Cornea

Penetrating wounds of the cornea may be caused by any sharp instrument or by flying pieces of stone, steel, etc. If the foreign body pierces the cornea, it is usually obscured from vision by resulting hemorrhage in the anterior chamber. The crystalline lens is nearly always injured so that blindness in the injured eye is almost the

inevitable outcome after these accidents. Pieces of steel may be drawn out with a magnet. Other substances are not removed easily and sometimes their removal is impossible. When the foreign body is lost in the globe, the lens ruptured and vision lost, the eye should be enucleated to prevent a sympathetic inflammation of the other eye. The wound may heal and the eye remain quiescent for a time but it is almost sure to become inflamed later. I removed a violently inflamed eye some time ago in which a fragment of glass had been carried for six years, during which time the eye remained quiet.

Treatment:

If the foreign body is not lost sight of it may be removed gently with a pair of cilia or other small forceps. When the iris protrudes it should be replaced. Lacerated tags of iris which hang in the wound must be snipped off with scissors before replacement is attempted. The pupil should be widely dilated with atropine if the corneal wound is central. If it is at the periphery, eserine is indicated to contract the pupil and prevent the iris from becoming incarcerated in the wound. The eye should be thoroughly sterilized, dressed with absorbent gauze and loosely bandaged.

Foreign Bodies in the Cornea

Perhaps the most common injuries are those inflicted by small foreign bodies, such as cinders, particles of sand, etc. These may be imbedded in the epithelium. Unless the foreign body is trivial in size the pain is usually severe and is aggravated by each movement of the lids. There is photophobia, the conjunctiva becomes suffused

with blood and lacrymation is increased. If the source of irritation is not removed corneal ulcer and inflammation of the iris and ciliary body may follow. Sometimes the foreign body is washed out by the flow of tears but the local irritation produced keeps the eye painful for some time.

Treatment:

A foreign body in the cornea is usually seen without difficulty; however, a plus sixteen lens will aid materially in locating it. When the intruding particle is found sticking in the cornea, if not deeply imbedded, an effort should be made to sweep it away with a cotton pledget on a toothpick or probe. This should be done gently so as not to drive it deeper into the corneal tissue. If this procedure fails the eye should be anesthetized with a 4 per cent. solution of cocaine, when the offending substance can be lifted out with a spud or the point of a Von Grafe knife. A solution of atropine, one grain to the ounce, should be instilled to allay the irritation and a bandage may be applied to exclude the light, to prevent infection and to facilitate the healing of the corneal abrasion.

The following combinations are often valuable:

℞.	Homatropine hydrobromate,	gr. i
	Acidi borici,	gr. x
	Aquae rosae,	dr. iii
	Aquae dest.,	oz. i

M. Sig:— Drop in eye after removing foreign body from the cornea.

℞.	Fluorescin,	gr. i
	Aquāe dest.,	oz. i

M. Sig:— Drop in eye to demonstrate denuded area upon the cornea. Abrasions will be given a green color.

Ecchymosis of the Eye Lids (Black Eye)

Injuries inflicted by blunt instruments usually leave a "black eye," an unsightly and, by the patient, a much-deplored disfigurement. This condition is due to hemorrhage within the cellular tissue underlying the lid. The condition is self-limited, but owing to the disfigurement which it produces, some form of treatment is often demanded.

Treatment:

Immediately following the injury, before much extravasation occurs, ice may be applied to some advantage. After the blood has been forced out into the tissues, heat is well borne and has some therapeutic value.

A blow may rupture a small blood vessel and cause a hematoma of the lid. When this occurs the skin over the tumor should be incised, after which the coagulated blood can be squeezed out. If only a simple extravasation of blood is present, pledgets of cotton saturated with lead water and laudanum, or a 10 per cent. solution of hamamelis should be laid on the eye and a bandage tightly applied. Painting the lid with guaiacol will help to give it a normal appearance by blanching the skin and obscuring the discoloration.

℞.	Ammon chloridi,	drs. iv
	Alcoholis,	drs. vi
	Aquae rosae, q. s. ad.	oz. viii

M. Sig:— Apply freely to the eye lids with cotton compresses.

℞.	Ichthyol,	drs. iii
	Glycerini,	drs. iii
	Aquae camph., q. s. ad.	oz. iii

M. Sig:— Apply freely to bruised lids.

Orbital Cellulitis

Blows applied with great force may cause an inflammation of the fatty cellular tissue of the orbit. This condition may also be caused by penetrating wounds. The symptoms in these cases are pain of a throbbing character, swelling, and discoloration of the lids and, usually, more or less marked protrusion and fixation of the eye ball. The conjunctiva is diffused and edematous, and double vision may be present.

Treatment:

In the early stages ice should be applied for the purpose of checking the exudation; later, hot applications are indicated with a view to promoting absorption. If pus is present an incision should be made deep into the cellular tissue for the purpose of evacuating it. The wound should be irrigated with a one to five thousand bichloride solution and a bandage applied. Tonics and general alterative treatments are indicated.

The following combinations are used in this condition:

℞.	Acidi borici,	dr. i
	Aquae rosae,	O. i

M. Sig:— Apply freely to lids with hot cotton compress.

℞.	Plumbi carbonatis,	gr. xxx
	Sodii bicarbonat,	gr. xxx
	Ung. zinci oxidi benz.,	oz. i

M. Ft. Unguent.,
Sig:— Apply locally to lid.

℞. Zinci acetatis, gr. ii
Ung. aquae rosae, oz. i
M. Sig:— Apply to lids followed by hot fomentations.

Enucleation of the Eye Ball

Anesthesia:

Where there are no existing contra-indications a general anesthetic is preferable. If local anesthesia alone is to be used, the technique for its administration is as follows: A speculum is inserted and a few drops of 4 per cent. solution of cocaine is instilled upon the conjunctiva. After two or three minutes the conjunctiva may be elevated slightly and an incision one or two millimeters in breadth may be made through it, which incision will permit of a view of Tenon's capsule. The capsule may be grasped with a fixation forceps, slightly elevated, and a needle be thrust between it and the sclera after which 20 minums of a ½ of one per cent. solution of novocain may be injected between the capsule and the sclera. In a very few minutes this will produce anesthesia sufficiently pronounced to enable the surgeon to enucleate the globe without pain.

Technique of Operation for Enucleation of Eye Ball

Anesthesia being complete, the surgeon dissects the conjunctiva and divides it about two millimeters back of the sclero-corneal margin. This dissection is carried completely around the cornea, ending at a point from

which the initial incision was made. The operator next grasps in his fixation forceps Tenon's capsule, and it likewise is dissected in the same manner as the conjunctiva was. The strabismus hook is now thrust under the external rectus muscle which is drawn forward and excised as closely as possible to its attachment to the sclera. The superior, inferior, and internal recti muscles are divided in the same manner, as likewise are the superior and inferior oblique muscles. The eye ball now being freed from its attachment, with the exception of the optic nerve, it may be drawn outward slightly and a pair of blunt curved scissors be slipped in behind it with the blades partially opened, and after they are made to approximate the optic nerve, this structure is clipped off as closely as possible to the eye ball. Care should be made so as not to produce any traction upon the nerve itself. The hemorrhage which follows can usually be controlled by pressure, though it may be necessary to pick up and tie some of the bleeding vessels. The purse string suture, so much used formerly, has now been almost entirely abandoned, because of the fact that a more roomy socket is left if allowed to approximate and to heal without sutures.

DISEASES OF THE EAR

Erysipelas of the Auricle

Erysipelatous infection of the auricle usually arises from an antecedent case, and is predisposed to by existing areas of irritation to the cutaneous surface. The erysipelatous inflammation may spread to the face and scalp and may even involve the pharynx. Because of the in-

fectiousness of the condition patients suffering with this disease should be isolated; especially should they be denied contact with surgical cases. Where this precaution has been neglected whole wards have occasionally been infected, with disastrous consequences. It is very necessary also that the surgeon in attendance on a case of erysipelas should from a standpoint of personal protection, be unusually cautious regarding abrasions of the skin upon his hands.

Treatment:

The treatment is not unlike that of erysipelas of any other portion of the body. Brisk purgation is indicated in the early stages. Aconite is said to cut short the attack. Pilocarpin is recommended by some to control the spread of the condition to unaffected parts. The auricle should be excluded from the air by soothing applications such as ichthyol and glycerin. Lead water and laudanum, applied by cotton compresses, is an excellent remedy. Stimulants may be indicated in the advanced stages of the disease.

The following formulæ will do much toward controlling the disease:

℞.	Hydrargi oxidi flavi,	gr. x
	Adipis lanae hydrosi,	oz. i
M. Sig:—	Apply to auricle and cover with flannel.	

℞.	Plumbi acetatis,	gr. xxv
	Ammonii carb.,	gr. xxx
	Aquae rosae, q. s. ad.	oz. vi
Ft. Lotio:		
Sig:—	Apply locally to allay irritation.	

Eczema of the Auricle and Meatus

Eczema is one of the commonest of the skin diseases which affect the ear. It may be of the acute or the chronic variety; although it is in the latter form that it most often finds its way into the office of the physician. The disease arises by the appearance of minute vesicles, which coalesce as they are irritated, causing the formation of scabs. As soon as the vesicles are removed, they reform, their presence causing intolerable itching; especially is this so when they involve the auditory canal.

Treatment:

The treatment consists of general and local measures. In debilitated cases attention should be given to proper feeding. The syrup of iodide of iron is often of value in cases of the scrofulous type. Fowler's solution of arsenic is also of great benefit in certain cases. The application of the official zinc oxide ointment locally after the crusts are removed, is of service. Salicylic acid in the form of an ointment is sometimes specific.

I have frequently seen the condition respond favorably to any of the following formulæ:

℞.	Acidi carbolici,	gr. v
	Spirit rectifi.,	dr. i
	Glycerin,	dr. i
	Aquae, q. s. ad.	oz. i

M. Sig:— Paint canal in eczema with pruritus.

℞.	Liniment calcis,	dr. i
	Ung. hydr. nitritis,	dr. i
	Ung. zinci oxid, q. s. ad.	oz. i

M. Sig:— Apply locally to the auditory canal.

℞.	Liquor plumbi subacet,	dr. i
	Glycerin,	dr. iii
	Aquae, q. s. ad.	oz. iii

M. Sig:— Apply to irritated parts to relieve pruritus.

Hematoma of the Auricle

An effusion of blood between the perichondrium and the cartilage is not an uncommon accident, especially among those who indulge in fistic encounters. Aside from blows upon the ear it may occur as a result of the brutal practice of pulling the ears of children. Soon after the trauma occurs, the ear is so distended with blood that its natural contour is obliterated. Usually there is much pain experienced by the patient, together with a sensation of burning or pricking of the ear. The tumor sometimes ruptures spontaneously or, if this does not occur, suppuration may set in.

Treatment:

When there is much retained blood, an incision may be made to promote its liberation. Ice should be applied at intervals, care being used not to push the refrigeration to such an extent that the resistance will be lowered, thus occasioning the possible complication of gangrene. After the blood is evacuated, the cavity originated by the clot may be irrigated with a mild antiseptic solution, or it may be painted with iodine. Lead water and laudanum make an excellent external application in the milder forms.

The formulæ below have been found most beneficial:

℞.	Ichthyol,	dr. i
	Ung. belladonnae,	dr. i

	Adipis, q. s. ad.	oz. i

M. Sig:— Apply externally to ear.

℞.	Hydrogenii dioxidi,	dr. iii
	Sodi bicarbonatis,	dr. i
	Aquae,	oz. viii

M. Sig:— Saturate cotton and place upon auricle.

Furunculosis of the External Auditory Canal

This condition consists of a circumscribed inflammation of the skin, together with the subcutaneous tissue, resulting from an infection with one of the pus producing organisms, usually the staphlococcus albus, and terminating in the formation of one or more boils or furuncles. It is an exceedingly painful condition, due to the swelling which it produces being confined within bony limits, thus causing pressure upon the sensory nerve endings in the skin.

Treatment:

When the boils are discovered, they should be incised immediately after which the ear may be irrigated with warm antiseptic solutions. After each irrigation the canal should be filled with an antiseptic ointment such as the yellow oxide of mercury. Hot applications are beneficial in subduing the pain. It may be found necessary to administer an opiate during the painful stages of the disorder.

The following combinations are always beneficial:

℞.	Guaiacol,	gr. x
	Menthol,	gr. x

Glycerini q. s. ad. oz. i

M. Sig:— Pour in ear after syringing with bicloride of mercury solution.

℞. Hydrarg. chlor. corros., gr. i
Alcohol, oz. i
Glycerin, q. s. ad. oz. ii

M. Sig:— Warm and pour in ear three times a day.

℞. Hydrarg. chlor. corros. gr. i
Vasalini alba, dr. iv

M. Ft. Ung. Sig:—
Instill into canal once or twice a day.

Otomycosis (Mycosis of the Auditory Canal)

This parasitic inflammation of the external auditory canal is usually observed in adults, children being rarely affected. The parasites attack the epidermis which, as it becomes affected, desquamates, the scales thus formed being mixed with the cerumen in the canal. As the process goes on the canal becomes filled with débris, causing more or less pain and deafness.

Treatment:

The treatment consists in removing the mass from the the canal, by irrigation, or with the spoon, and in instilling an antiseptic solution daily for considerable periods. The frequent irrigation of the canal with a 1-5000 bichloride of mercury solution has, in my hands, proved to be a valuable procedure.

I have used the following combinations with excellent results:

℞. Hydrarg. bichlor., gr. ½
Alcoholis, q. s. ad. oz. i
M. Sig:— Warm and pour in ear once a day.

℞. Zinci oxidi, dr. ii
Glycerini, dr. iv
Aquae rosae, q. s. ad. oz. i
M. Sig:— Apply to the surface of the canal once or twice a day.

℞. Ichthyolis, dr. i
Aquae calcis, dr. iii
Aquae rosae, oz. i
Glycerini, q. s. ad. oz. ii
M. Sig:— Apply to canal once or twice daily.

Foreign Bodies in the External Auditory Canal

These may include innumerable small objects, such as shot, beans, peas, beads, and pebbles—in fact, anything small enough to permit its being pushed into the canal. In children the intruding particle may remain in the canal for long periods without its causing any symptoms. If the object is large enough to close the lumen of the canal, deafness will ensue. Usually when the foreign body is long in situ, inflammation of the canal wall, with possible bony necrosis or even mastoiditis, will result.

Treatment:

By directing a stream of water into the ear, the foreign body can be washed out usually. This should not be used if the substance is a cotton seed or bean; for should the first attempt be unsuccessful, the bean or seed will swell, entirely filling the canal. In these cases a spec-

ulum should be inserted and a lacrymal probe, bent so as to form a small hook, should be gently pushed past the intruding particle, then turned so as to engage it, after which it is drawn out, bringing the foreign body with it. I have used this method in several cases, always with the desired result. There was sent to me not long ago a boy twelve years old, who had pushed a pebble into his ear for the purpose of relieving an earache. The stone completely filled the lumen of the canal, which was greatly swollen and was bleeding from unsuccessful attempts at removal, and it was only after a half hour of persistence and persuasion that I succeeded in getting past it a No. 1 Bowman's probe, previously bent. In turning the improvised hook a twinge of pain caused the patient to jerk his head away, which action resulted in the removal of the pebble. In this case a mastoid inflammation would have resulted if the pebble had not been removed, as a previous suppurative condition of the ear existed.

In cases where foreign bodies could not be grasped by forceps, or where the lumen of the canal was entirely filled, preventing the insertion of a hook behind them, they have been removed in this very ingenious manner: a speculum is inserted and a match, previously dipped in glue, which is just about to "set," is placed against the foreign body and allowed to rest on the speculum for several minutes. It is then withdrawn, bringing the foreign body with it. This is applicable only to cases in which the canal and foreign body are dry. Manipulations in the ear should be performed very gently, and should be attempted only under a reflected light. Care should be taken not to wound the membrane tympani by

the instrument used, or to rupture it by pushing the foreign substance against it.

Insects in the Auditory Canal

During the summer months it is not unusual to find insects lodged in the auditory canal. This accident, though not dangerous as a rule, causes the patient a great deal of distress from the sensation produced by the insect changing positions. I have never seen any real harm ensue from the presence of an insect in the ear except in a case in which an ixode or "dog tick" had fastened itself upon the drum membrane, setting up a painful myringitis which lasted ten days or more.

Treatment:

Insects are very easily removed by first instilling a five per cent. solution of chloroform in glycerine into the ear. This anesthetizes the intruder, after which its removal by syringes with warm water is easily accomplished.

Myringitis (Inflammation of Drum Head)

Myringitis is a condition frequently mistaken for an acute otitis media. It presents a clinical picture not unlike acute inflammation of the middle ear, except that the pain is not so severe and there is less deafness. The appearances of the drum membranes in the two conditions, however, are very similar, and in each there is experienced a feeling of fullness in the head with accompanying tinnitus. The following point is diagnostic: there is no bulging in the tympanic membrane in simple myringitis; whereas, in the middle ear inflammation there is usually

an exudate with a characteristic pushed-out appearance of the tympanum.

Treatment:

Sedatives are to be prescribed to combat the continuous discomfort, which may be either moderate or excruciating in character. Codein is useful in the severer cases, though phenacetin, caffein, or the bromides may suffice in the milder forms of the disease. Phenol and glycerine, in strength of ten grains to the ounce, applied locally are sedative. Heat to the ear usually gives relief. This may be effected by the use of the hot water bottle or by pouring a warm hydrocarbon oil into the ear.

The prescriptions below give great relief:

℞.	Acidi carbolici,	gr. x
	Glycerin,	oz. i

M. Sig:— Drop into ear to relieve pain in acute myringitis.

℞.	Chloralis hydratis,	gr. ii
	Camphorae,	gr. ii
	Acidi carbolici,	gr. v
	Olei ricini, q. s. ad.	oz. i

M. Sig:— Warm and pour in ear every hour.

℞.	Morphinae hydrochlor.,	gr. ii
	Cocainae hydrochlor.,	gr. x
	Aquae,	oz. i

M. Sig:— Drop in the ear for acute pain in myringitis.

Eustachian Tubal Catarrh

The middle ear is a closed cavity, except for the eu-

stachian tube. This tube is for the purpose of ventilating it. When the tube becomes closed by a plug of mucus being forced into it, or by its lumen being shut off by swelling, a rarefaction of the air in the middle ear is established, because the fine blood vessels which line it take up the oxygen. The semi-vacuum produced by this process causes a drawing in of the drum membrane, it being the point of least resistance, and a consequent crowding of the joints of the ossicles, with pressure upon the receptive apparatus, and attending deafness.

The nose secretes several ounces of mucus every twenty-four hours, this being used in health to moisten inspired air. When normal nasal breathing is not carried on, a part of this unused secretion gravitates to the floor of the nose and decomposes. It is true that a portion escapes in front, giving rise to the familiar "running nose," but enough remains to produce an irritation which aggravates the discharge. This is the origin of the catarrh. If under these conditions the patient blows the nose, infected secretions are forced up into the ears. The process of inflammation, which is occasioned by these secretions, fills the ear with serum. This serum may escape down the tube, or it may burst through the drum membrane, causing the familiar running ear. The consequences are that a troublesome degree of deafness results.

Treatment:

The treatment of this condition begins first with the correction of the causes which have led to the disturbance within the tube itself. This usually is found to be a catarrh of the nose or nasopharynx, which has been set up by a focus of infection, such as diseased tonsils, a chronic

ethmoiditis, or a suppuration of the frontal or maxillary sinuses. Occasionally the catarrh is the result of a deviated septum with resultant opposition of mucous surfaces. It is the most evident fact that the catarrhal process within the tubes can not be alleviated by any amount of treatment unless the predisposing conditions are given the most sedulous attention. Not until the nose and throat are made to conform as nearly as possible to the normal standard may treatment of the eustachian tubal catarrh be commenced with anything like the possibility of a favorable result. The treatment of the tube itself consists of efforts to restore and to maintain its normal patency. The nasopharynx should be kept free from all discharges. An alkalin spray conscientiously used by the patient at home will greatly facilitate this cleansing process. Before attempting Politzerization or catheterization of the tube, the mucous membrane surrounding its orifice may be shrunken with adrenalin and a post rhinoscopic mirror should be used to determine whether secretions hang over its mouth. Should the ear be inflated while secretions within the lumen of the tube exist, these secretions will be blown further up into the tube itself, or may even reach the tympanic cavity, this accident subjecting the patient to the grave possibility of a middle ear suppuration as a result of the physician's carelessness. Other than the correction of existing pathology within the nose and throat, with frequent cleansings of the mucous surfaces of both, together with daily inflations of the middle ear, which process is facilitated by the applications of adrenalin to the orifice of the tube, there is little of practical value that can be done to relieve this condition.

The following formulæ give relief:

℞.	Acidi carbolici,	gtts. x
	Sodii bicarbonat,	dr. i
	Glycerini,	oz. i
	Aquae, q. s. ad.	oz. iii

M. Sig:— Spray nose 3 times a day.

℞.	Pulv. acaciae,	gr. l
	Zinci sulph.,	gr. x

M. Sig:— Snuff into nostrils 2 or 3 times daily.

℞.	Ext. hydrasti fl.,	oz. i
	Glycerini,	oz. i
	Aquae camphorae,	oz. ii
	Aquae, q. s. ad.	oz. iv

M. Sig:— Use with atomizer three or four times daily.

Retained Cerumen (Impacted Ear Wax)

An impaction of ear wax in the auditory canal is due, primarily, to an abnormal condition of the secretion itself. Cerumen of normal consistency will gradually flow toward the meatus and escape, it being retained only when it is dryer than normal or is mixed with seborrheal scales. Occasionally the canal is filled by retentions of years standing, and a mechanical deafness results.

Treatment:

The treatment consists in softening the mass with sodium bicarbonate and glycerin, grains x to the ounce, this being followed by a cleansing of the canal by irrigation. Hydrogen dioxide, in 50 per cent. solution, instilled into the ear several times daily, will soon soften the impaction so that it may readily be washed out.

The following combinations have been used by the author for the same purpose with excellent results:

℞.	Sodii bicarb.,	gr. x
	Glycerin,	dr. iii
	Aquae, q. s. ad.	oz. i

M. Sig:— Drop in ear to soften inspissated cerumen preparatory to removing with a syringe.

℞.	Hydrogen dioxide,	dr. iii
	Aquae dest., q. s. ad.	oz. i

M. Sig:— Warm and pour in ear to disintegrate cerumen.

℞.	Ether sulphric,	dr. i
	Alcoholis, q. s. ad.	oz. i

M. Sig:— Pour in ear to dissolve ear wax.

Acute Inflammation of the Middle Ear

This involvement of the tympanum usually results from the encroachment upon it of infections from the nose and throat, which have reached the cavity by way of the eustachian tube. The turbinals are composed of erectile tissue and free space should be given them in which to expand. When they do not have sufficient space for this purpose, contact and pressure take place whenever swelling of the turbinals occurs, causing excessive stimulation and coryza. When breathing ceases through the nose, the normal mucus, not being evaporated, thickens and discharges into the post-nasal space, this often being a factor in the production of the so-called post-nasal catarrh. This symptom is noticed more in the mornings, because at night, while the patient sleeps, the blood gravitates to the turbinals and the occlusion is more complete.

If the obstruction is post-nasal, the secretion falls to the floors of the meatuses and decomposes. This causes a bad odor, a hyperemia or catarrh of the mucous membrane, and is always a menace to the ears, as the catarrhal process may follow up the eustachian tubes and invade the tympanum. Plugs of mucus occluding the eustachian orifice stop the ventilation of the middle ear, and deafness is a frequent symptom. "Hardness of hearing," ear-ache and suppuration are very common in children with adenoids. Otologists are pretty well agreed that middle ear inflammation is rarely, if ever, due to any cause without concomitant nasal disease.

The clinical picture presented is the same as seen in cases of myringitis, except that bulging of the drum membrane nearly always results, being caused by accumulations within the middle ear cavity.

Treatment:

In the early stages carbolized glycerine, instilled into the ear, may bring relief. Heat is well borne and is beneficial. The pain is often much ameliorated by gently directing a stream of warm water into the ear. If there is much bulging of the tympanic membrane, all local measures to obtain relief for the patient will fail, and a free incision should be made in the drum membrane to promote the liberation of the retained secretions. After the drum membrane is incised irrigations of the ear are not to be recommended, as they predispose to increased infection from the canal, which may reach the mastoid cells, terminating in a mastoiditis.

The following formulæ are useful:

Warm water is injected into the affected ear, which is then treated with:

℞.	Phenolis,	gr. iii
	Glycerini,	oz. i

M. Sig:— Use locally in ear every 2 hours as an analgesic.

℞.	Tr. opii,	dr. iv
	Glycerini q. s. ad.	oz. i

M. Sig:— Warm and pour in ear every hour for relief of pain.

Acute Suppurative Otitis Media (Acute Middle Ear Abscess)

In nearly every instance the cause of acute suppuration of the middle ear is some pathologic condition of the nose or throat. In the eruptive fevers, or diphtheria, the pyogenic organisms causing them gain access to the middle ear by way of the eustachian tube and when suppuration commences their presence in the discharge can be demonstrated by the microscope. Adenoids of the nasopharynx predispose to suppuration by obstructing the tube and bathing its orifice with secretions which are often carried up the tube by the efforts of the patient in blowing the nose. The patient is usually prompted to do this persistently and vigorously, thereby constantly menacing the integrity of his ears.

A frequent cause of middle ear suppuration may be found in nasal obstructions or from pressure of septal deflections upon turbinals. This will sometimes bring about erosions and ulcerations at the points of contact. The opposing surfaces are often bathed with pus, the presence of which is a constant source of danger to the ears. When one nostril is occluded to such an extent

that breathing ceases through that side altogether, the normal mucus, not being evaporated, falls to the floors of the meatuses, becoming decomposed and infected. This infected catarrhal process frequently follows up the tube and invades the tympanum, setting up suppuration.

Treatment:

The results of treatment are usually satisfactory. If these cases are allowed to run nature's course, the suppuration usually becomes chronic, or the condition may become complicated by a necrosis of the mastoid. The first indication in these cases is an incision through the bulging drum membrane in the posterior quadrant. It should be carried high up into Sharpnell's membrane. This character of an incision gives the best drainage to the tympanum and attic. The ear should be irrigated hourly, when possible, with a hot one to one-thousand solution of bichloride of mercury. Ice may be applied to the mastoid. In some cases at least it seems to do good. Later the dry treatment may be instituted. This consists of repeated cleansing with small pledgets of cotton and lightly dusting with some of the antiseptic powders. Of these, boric acid seems to give the best results. In nearly all cases, if this line of treatment is persisted in, the condition subsides in a few days.

Incision through the Tympanic Membrane

A paracentesis, which literally means a puncture, should never be made for the liberation of retained secretion within the tympanic cavity, as the opening thus produced may close within an hour or two thus entirely defeating the object of the operation. When an evacua-

tion of fluid in the middle ear is desirable, a free incision at the point corresponding to the greatest bulging should be made, and it should extend perpendicularly from the top to the bottom of the membrane. For this operation a general anesthetic is always indicated as the pain is severe when it is done without anesthesia. Injecting novocain directly under the skin, within the canal, will produce a certain amount of anesthesia, but the procedure causes much pain and is not to be advised. In the event that the patient is not able to have a general anesthetic, the drum membrane, at the point of its greatest bulging, may be touched with carbolic acid, which after a few moments is washed off with alcohol. This will produce a better anesthetic effect than can be had by applying solutions such as cocain or novocain locally.

Chronic Suppuration of the Middle Ear (Otorrhea)

The chronic form of middle ear suppuration is one of the most obstinate conditions. The difficulty of obtaining good results is often increased by the disregard which the patient has for his own condition. Many of the laity believe that the discharge is salutary rather than harmful. I have had persons with chronic suppuration of the ears consult me in reference to their hearing who positively refused to have the suppuration stopped. The conditions which are in these cases presented under examinations are varied. The discharge may be profuse, thin or creamy, odorless or foul. It may be free enough to keep up a macerated condition of the canal, or may be so scant that it dries as rapidly as it forms, the patient not being aware that he has a continuous suppuration.

The drum-head may be entirely destroyed or have one or numerous openings in it. The ossicles may be intact or be almost entirely destroyed by necrosis. Polypi and granulations may be absent or the whole tympanic cavity may be blocked by them.

Treatment:

In these cases the principles of absolute cleanliness must be carried out. The ear should be syringed twice daily with a warm one to five-thousand bichloride solution, using at least a quart of the solution at each syringing. At least once a week a Politzer's carved canula should be inserted carefully into the attic by the physician. To this is attached a tube eighteen inches long at the distal end of which is a Politzer's bag, filled with a warm, sterile solution. While the canula is held in place by the operator, an assistant makes forcible compression of the bag, which sends a fine stream of solution violently into the attic. The large amount of inspissated secretion that usually may be brought out of the attic by this method is surprising. I have in this way freed the attic of large amounts of débris after the ear had been systematically syringed for weeks. The one objection to this method is the possibility of carrying infection into the antrum or further into the mastoid.

In many instances these cases seem to do well under a simple daily cleansing of the ear with sterile pledgets of cotton, after which a preparation containing boric acid, ten grains, and alcohol, one ounce, is instilled. Of course, in this, as in other diseased conditions, no treatment can be formulated that will meet the indications in every case. In the majority of cases, however, I believe that this

line of treatment will give better results than any other, if properly and persistently applied.

Aural Polypi

Aural polypi have their origin in the middle ear cavity and occur secondary to a chronic suppurative otitis media. Occasionally they are multiple, but usually the auditory canal is entirely blocked by a single polypus, which emerges through the opening in the drum membrane. Their presence is a source of mischief, as they retain secretions and interfere with hearing. They are usually of the mucous variety, though occasionally fibrous polypi are met with.

Treatment:

Some otologists believe that where polypi and granulations exist in the tympanic cavity nothing short of a radical mastoid operation will benefit the patient. This, no doubt, is the ideal treatment when it can be carried out, but we are often confronted with patients who refuse to submit to an operation of this nature. In such cases we are justified in treating the patient along more conservative lines. I have treated a number of persons with suppurative otitis media, when polypi and granulations were present, that at least were relieved if not cured. The polypi were cut off with a snare, the wire used being the circular wrappings of a violin G-string. I have never been able to find a wire in the instrument houses that was not too stiff and unwieldy for this purpose. The granulations were destroyed with chromic acid fused on the end of a probe. The opening in the drum membrane is usually so large that a great deal of the tym-

panic cavity is accessible, thereby making the destruction of granulations easy.

Acute Mastoiditis (Mastoid Abscess)

The disease may be a sequence of influenza, tuberculosis, diphtheria, or acute rhinitis, though it is often a secondary manifestation of a suppurative otitis media, either acute or chronic. Often the first symptom is that of pain; but usually this is followed in a brief period by edema, which may be sufficiently marked to cause the ear to stand outward from the head. Much tenderness under pressure of the areas above the mastoid antrum and the tip of the mastoid is indicative of mastoiditis. There is usually a marked rise of temperature, though this is not an invariable symptom, as extensive necrosis may be present with a temperature not exceeding 100° F. The disease must be differentiated from the so called external mastoiditis, which results from furunculosis of the external auditory canal.

Treatment:

In the early stages, if the disease is due to some cause other than suppurative otitis media, the drum membrane should be incised to promote drainage. This may be considered almost an invariable indication, as there is seldom, if ever, a mastoid suppuration in which there is not retained pus in the tympanic cavity. Ice should be applied over the mastoid during the early stages, but overrefrigeration must be guarded against. The general constitutional symptoms should be given appropriate attention. When it is possible a differential blood count

should be made daily. A high leucocyte count is usually present. When the white cells show no tendency to diminish in number, even though the drainage from the tympanum is free, and when the tenderness over the mastoid continues over a period of two or three days, the operation of mastoidectomy is justifiable and should be done.

The Simple Mastoid Operation

The Schwartz operation for the cure of acute mastoiditis is performed as follows: An incision is made from below the center of the mastoid tip extending upward one-third of an inch posterior to the postauricular groove, to a point one-half inch below the attachment of the auricle. The incision should be made from below upward to avoid the possibility of driving the knife into the deep structures of the neck as might occur should the incision be made the other way, and the belly of the knife should be used.

The next step in the operation consists in retracting the edges of the wound and elevating the periosteum from the bone. This should be done gently, being careful not to lacerate the periosteum, which when badly bruised will slough. The elevation is best accomplished with a thin, blunt periosteotome. The operator should see that the whole mastoid process is exposed before proceeding further. After this is accomplished a pair of blunt scissors should be used to separate the attachments of the muscle from the tip of the mastoid. The operator is now ready to locate his landmarks.

In opening the antrum, the next step in the operation, he must work within the limits of the suprameatal or

Macewen's triangle. The operator is safe if he does not get too high and open the cranial cavity, or if the knee of the lateral sinus is not malplaced so that it lies over or against the antrum. I once saw as eminent an authority as Politzer open the lateral sinus by accident while seeking for the antrum. The lateral sinus in 95 per cent. of cases lies far enough back to be missed if the surgeon keeps within the boundaries of the triangle.

The cortex over the whole mastoid may now be removed with a gouge. All overhanging edges are to be removed carefully and the whole bony wound made as smooth as possible. While this part of the procedure is being carried out, the assistant should sponge constantly to keep the wound free from blood. The sinus is usually covered by a dense, fibrous wall, and if the operator will bear this and its probable position in mind, he will seldom open it. If the sinus should be opened by accident, the bleeding may be so profuse that the work cannot be properly completed. This will depend upon the stage of the operation in which the accident occurs.

The Radical Mastoid Operation

After the operation has been carried as far as in simple mastoidectomy, the next step in the procedure, if the radical operation is to be done, consists of a removal of the covering of the aditus ad antrum, a part of the posterior wall of the tympanum. The ossicles, with the exception of the stapes, should then be removed. The stapes must not be disturbed under any circumstances, for if this is done hemorrhage into the vestibule—Meniere's disease—is almost sure to occur; a very deplorable accident. The tympanic cavity is now to be freed from all inspissated

pus, granulations, or necrosed bone. This must be done with the greatest of care. This cleaning process should be accomplished with a sharp curette. Every pocket of infection must be thoroughly explored and eliminated, leaving the tympanum smooth and clean in every direction. In curetting the tympanum great care should be used not to disturb the semicircular canals, the front plate of the stapes, or the fenestra rotunda. The bridge of the aqueductus Fallopii, which contains the facial nerve, lies on the posterior wall and should be avoided as much as possible. The surgeon should also remember that the roof of the tympanum may be necrosed and the cranial cavity entered by careless manipulation of the curette.

The wound is now dressed with gauze which is allowed to remain for four or five days, if nothing occurs to necessitate the removal of the dressing. When redressed the wound is to be gently syringed with an antiseptic solution and again packed with gauze. Iodoform gauze seems to stimulate granulations in the mastoid surface of the wound, and a saturated solution of alum is often used for the purpose of hardening the granulations. Subsequent dressings should be made daily, or every other day, until the whole wound heals.

Some authors advocate closing the post-auricular incision with sutures, but it seems to me to be bad surgery to close a septic wound, and the best results are obtained when this is not done at the time of the primary operation.

The Blood Clot Method of Treating Mastoid Wounds

This operation, when successfully performed, certainly

lessens the time of healing, leaves a better scar, saves the patient pain, and lessens the deformity, all of which are gratifying to both the surgeon and the patient. Previously this procedure has not been very favorably thought of by some surgeons. When the operation first came out Jack, then of the Massachusetts Charitable Eye and Ear Infirmary, reported 60 cases treated by the closed method with favorable results in only four cases. At about the same time Kopetzky, at the Manhattan Eye and Ear Infirmary, used the method extensively, but abandoned it because of the poor results obtained. Kopetzky speaks of this in his book.

The operation has these disadvantages: in practically all cases of mastoiditis we have occurring simultaneously a pus forming erosion in the tympanic cavity, usually at the vault. In the open method this drains through the aditus ad antrum into what previously was the mastoid antrum and very much enhances the healing process in the tympanum. When the blood clot method is used, this discharge of pus, following the laws of gravitation, seeps into the mastoid wound and predisposes to the infection of the clot. If this clot becomes infected, the patient is practically in the same danger as he was previous to the operation. When we remember the anatomy of the mastoid, we will recall that dehiscence in the bone may allow direct extension of the infection to the meninges. Infection may follow along the sheaths of the arteries or nerves, or through imperfectly closed sutures. The roof of the antrum and the lateral sinus are especially vulnerable points.

I have always opposed this operation, because I have felt that it was bad surgery to close a septic wound. Re-

gardless of what method is used in treating a mastoid wound, there is this to be remembered: pus in the mastoid cavity puts our patient in the same position that he would occupy were he sitting upon the proverbial powder magazine, and the object of the mastoid operation is to remove him as far from that source of danger as it is possible.

Bell's Palsy (Facial Paralysis)

Bell's palsy is sometimes seen complicating acute otitis media. This is due to the position of the facial nerve in the tympanic cavity. It will be remembered that the nerve crosses its inner wall under a covering the thickness of a membrane, and that the covering is sometimes congenitally absent. The disease is not, by any means, to be considered an indication for surgical interference, as it frequently occurs when no necrosis of the mastoid is present. The majority of the cases recover spontaneously.

The following formulæ may be of benefit:

℞.	Chlorofomi,	dr. i
	Tinct. aconiti,	dr. i
	Linim. saponis,	oz. i

M. Sig:— Apply over exit of 7th nerve and cover with flannel in case of Bell's palsy.

℞.	Ext. stramonli,	gr. iii
	Potassii iodidi,	dr. i
	Aquae chloroformi, q. s. ad.	oz. vi

M. Sig:— A tablespoonful every three hours to relieve pain.

Tinnitus Aurium (Head Noises)

A number of subjective auditory sounds, varying in intensity, and described as whistling, singing, roaring, buzzing, clicking, and the like, fall under the classification of tinnitus aurium. It is one of the most distressing conditions to which one can be subjected. The long continued annoyance, caused by the false noises, undermines the nervous system to such an extent that insanity has been known to follow as a direct result. The patients often make the most pitiable appeal for relief and frequently entreat the aurist to destroy the hearing in one or both ears in order to subdue the noises. Many suicides have been traced to this unfortunate condition.

Treatment:

The symptom is said to be due sometimes to a stimulation of the nervous arrangement of the auditory tract from syphilis. Certainly, under such conditions, one might look for some improvement following the administration of intensified antisyphilitic treatment. Some authors trace the condition to a derangement of the thyroid gland and have reported the administration of the thyroid extract to have been followed by good results. Bromides and other sedatives are useful in dulling the patient's sensibility to the noises. Operative procedures, thus far instituted, have invariably ended in failure.

The following are good combinations for the treatment of the disease:

℞. Acidi hydrobromici diluti, 10 per cent., oz. iv
Sig:— Teaspoonful in wine-glass full of water thrice daily after meals.

℞. Pilocarpinae hydrochloratis, gr. i
Sacchari lactis, gr. xxx
Misce. et fiant, Chart No. x
M. Sig:— One powder night and morning.

℞. Ammonii chloridi, dr. iii
Tinct. cimificugae, oz. i
Syrup aurantii florum, q. s. ad. oz. iv
M. Sig:— Teaspoonful in a little water after meals.

Defective Hearing in Children

There is probably no condition which so retards the progress of a child at school as does defective hearing. This is not as uncommon among children as may be supposed, for when it exists it is often overlooked, and the child's lack of progress and apparent stupidity is too often attributed by the teacher to a lack of interest in school work, or even to insubordination. This fact was very conclusively demonstrated a few years ago by a systematic examination of the hearing of pupils in a school for backward children in Massachusetts, which resulted in the discovery that in three-fifths of these children the hearing was defective.

Statistics have been gathered which go to indicate that about fifteen per cent. of all school children have defective hearing. The discovery that a child is deaf will at once account for his inattention. It is not to be wondered at that he lacks interest in the studies which his normal companions enjoy, for what they hear perfectly he catches only with the greatest effort, if he does not misunderstand it entirely. It is quite obvious that such a defect will cause a child to appear to be dull and will lead eventually to an undeveloped intellect. The inattention which deaf-

ness gives rise to causes a lack of precision also. The child misses the first part of the sentence addressed to him by his inattention, and in trying to catch it he loses the second part. In such cases there is usually an otosclerosis present. The sounds are mixed or confused because the ossicles are not quick to convey the vibration.

Treatment:

The treatment of deaf children begins with the removal of the cause of their impaired hearing. The ear should not be indiscriminately interfered with. It, more than any other organ should escape the remedies from the family medicine chest. Parents should be advised that beyond a gentle washing, it is dangerous to do anything to the ear without the physician's sanction. "Put nothing but your elbow in your ear," is an old maxim and if it were adopted as a guide, much mischief could be prevented. The hearing in children is often found to be impaired by a collection of cerumen in the external canal. Eczema of the canal may also lead to an accumulation of débris, which interferes with the hearing, though the deafness soon disappears when the cause is removed.

Many cases of dullness of hearing in children are traceable to a catarrhal condition of the nose and throat. Here the proverbial ounce of prevention is worth a pound of cure. Good hearing is best promoted by keeping the mucous membrane of these organs in a healthy condition. This is best done by an habitual exposure to pure air, thus preventing the "cold in the head," which is almost certain to be fostered by coddling an indoor life. We owe it to these little sufferers to do all in our power to

restore them to normal, thereby giving them as near an equal chance with the other children as possible. In these cases this cannot be done without first establishing a healthy condition of the nose and throat.

Hearing Tests for Children

It is impossible to make a correct conclusion regarding a child's inattention or backwardness until the hearing has received appropriate tests. The simplest test for hearing is made with a watch. A number of persons with supposed good hearing should be tested first so that the average distance of hearing for that particular watch may be gauged. The same watch should afterwards be used in all cases tested. The test is to be made in a quiet room, and the child must not be allowed to see the watch. The watch should first be held at the distance at which it was heard by the average ear, and then be moved nearer and nearer until the tick is audible. It would be well to test the power of the voice in children proven defective by the watch test. The children are to be placed with their backs to the examiner so as to avoid the possibility of lip reading. The examiner starts at the distance of twenty feet from the pupils and gradually moves closer while speaking until his words can be heard and repeated by the children.

DISEASES OF THE NOSE

Acute Rhinitis (Acute Nasal Catarrh)

An acute nasal catarrh is usually the direct result of catching cold. Catching cold is a very complex process

and one difficult to explain, but it is generally thought to be due to a lack of balance of the vaso-motor nerves of the mucous membrane when acted upon by the excitation produced by some toxic substance. It is also probable that nasal occlusion has much to do with the phenomena of colds. The function of the nose is to warm, filter and humidify the inspired air as it passes into the lungs. When normal nasal breathing is not carried on the air enters the lungs unstrained and without being sufficiently moistened and warmed. The result is that it attracts the moisture from the larynx, trachea, and bronchi and keeps them constantly dry and irritated. It is reasonable to suppose that this irritation may be responsible, in many instances, for the vaso-motor changes which manifest themselves as acute rhinitis.

Treatment:

The treatment of an acute rhinitis should begin with brisk purgation. For this purpose nothing has such a salutary effect as castor oil in liberal doses, given at bedtime. Quinine is said to favorably influence the condition during the early stages. Aspirin and Dover's powders usually have a beneficial effect. Hot foot baths, together with copious draughts of hot lemonade, are valuable adjuncts to treatment. When the patient is confined to bed, or to his room, a spray of Dobell's solution, followed by camphor or menthol in connection with liquid petroleum is beneficial.

If great engorgement of the mucous membrane occurs with consequent occlusion of the accessory sinuses, adrenalin chloride combined with the Dobell's solution may

be used as a nasal spray. Where the patient is not confined to his room, it is well to use sprays night and morning and to observe the precaution of keeping him indoors for half an hour afterwards, for while this procedure alleviates the inflamed surfaces, it also robs the membrane of its mucus which is nature's protection. Atropine is a valuable drug in cases where the discharges from the mucous membrane are excessive.

The following formulæ will be found beneficial:

℞.	Tinct. aconiti,	qtts. v
	Tinct. belladonnae,	qtts. xxx
	Syrupi toulu, q. s. ad.	oz. iii
M. Sig:—	Teaspoonful every 3 hours.	

℞.	Acidi carbolici,	gr. x
	Sodii bicarb,	dr. i
	Sodii biborat,	dr. i
	Glycerini,	oz. i
	Aquae camphorae, q. s. ad.	oz. iii
M. Sig:—	Use with atomizer 3 or 4 times a day.	

℞.	Sodii salicylatis,	gr. xx
	Sodii boratis,	gr. xx
	Glycerini,	oz. i
	Aquae, q. s. ad.	oz. iv
M. Sig:—	Spray nose 3 times a day.	

Hay Fever (Hyperesthetic Rhinitis)

Hay fever has been called hyperesthetic rhinitis. The term is an appropriate one, for associated with it is an underlying neurotic temperament. The highly sensitized

individual is the one affected. Persons with phlegmatic temperaments rarely suffer.

Individuals affected with hay fever are said to possess a phenomenon known as anaphylaxis; in other words they they are hypersensitive, or easily poisoned, by a particular irritant. This irritant is usually a pollen; though in some instances certain proteins taken by the stomach are responsible for the attacks.

It is thought that ten per cent. of hay fever cases are dietetic; they result from food proteins. These dietetic cases, while showing an anaphylactic tendency for certain articles of diet, usually are immune to irritation from other sources. Probably four per cent. of hay fever cases may be traced to external animal irritants such as horse hair, furs, goose feathers, wool, etc. Four per cent. are said to be due to occupational dust. The remaining eighty per cent. of victims owe their unhappy condition to the interesting fact in nature that pollen, the sex element in the plant, when not distributed by insects, is carried by the wind. Through this medium it reaches the hypersensitive mucous membrane of the temperamental individual and the process of "hay fever" begins.

Ragweed is the most frequently met with irritant. Its pollen, being light, may be carried for great distances. Next to ragweed comes timothy as a source of discomfort. Here in Texas the mountain cedar comes in for its share of hay fever victims. Many other varieties of pollenating plants act as irritants.

Treatment:

The general condition of the patient should be given

attention. A change of climate, which literally means getting away from the irritant responsible, is often helpful. By a series of intradermal tests the pollen, to which the patient is susceptible, may often be discovered. When the irritant is isolated the desensitization of the patient may be accomplished by the subcutaneous injection, in increasing doses, of an extract prepared from the protein responsible for the attacks. Locally, adrenalin chloride, to reduce turgescence of the membrane, gives immediate though only temporary relief.

The following formulae are much used and are beneficial:

℞.	Sodii sulphas.,	gr. xl
	Sodii bicarb.,	dr. i
	M. ft. chart.,	No. x
Sig.	One every 3 hours to combat the acidosis associated with hay fever.	

℞.	Olei eucalypti,	M. xv
	Thymolis,	gr. xx
	Mentholis,	gr. xx
	Liq vasolini, q. s. ad.	oz. iii
M. Sig:—	Spray nose every hour or two.	

℞.	Phenol,	M. iii
	Sodii bicarb.,	gr. xxx
	Sodii boras.,	gr. xxv
	Adrenalin chlor.,	dr. ii
	Aqua dest., q. s. ad.	oz. iii
M. Sig:—	Spray into nostrils every hour to reduce turgescence.	

Chronic Rhinitis (Chronic Nasal Catarrh)

The danger from chronic rhinitis is so far reaching that it may be said, without exaggerating, that this condition gives origin to at least 75 per cent. of all otitic diseases. It has been remarked that the results of a chronic rhinitis may be found all the way from the soiled handkerchief to the brain abscess. In saying that a patient with a brain abscess may owe his condition to a chronic catarrh may sound like an exaggeration, but if we examine it a little more closely, we will see that it is not. Let us say a brain abscess originates from a necrosed antral roof; the necrosis of the antral roof results from a mastoiditis following a suppurating middle ear; and the suppurating middle ear is, in turn, due to an infection of the eustachian tube. We may follow each link of this chain, and we will find that the diseased tube came from an infected catarrhal discharge which was blown into it. The catarrh originated from a deviated septum, post-nasal vegetations, or infected tonsils; and the whole process was set in motion by the familiar phenomenon known as a "cold." There is no doubt that the suppurating ears following measles, scarlet fever, and diphtheria are influenced to a great extent by the condition of the nose. For several years I had the privilege of doing all the otological work in two orphan homes, and during two epidemics of measles and one of scarlet fever which occurred in these institutions under my observation, I was impressed by finding that the greater part of the children who developed middle ear complications, following the exanthemata, had adenoids or diseased tonsils with resulting rhinitis. Adults who have suppurating middle ears, fol-

lowing attacks of La Grippe or colds, are usually victims of chronic nasal catarrh.

Treatment:

No type of treatment can be considered curative unless the nose and throat are first made to conform to a normal standard. Focal infections in the sinuses and tonsils must receive appropriate surgical attention and deflected nasal septi, if they cause opposing surfaces of mucous membrane, must be straightened. The local treatment consists of thoroughly cleansing the nasal passages of discharges and applying liquid petroleum, or other hydrocarbon oils, for the mechanical protection which they afford. The use of ten per cent. ichthyol ointments has many advocates.

Good results may be derived from the use of the following formulæ:

℞.	Sodii bicarb,	dr. vi
	Sodii biborat,	dr. iv
	Glycerini,	oz. i
	Adrenalin,	dr. iv
	Aquae, q. s. ad.	oz. vi

M. Sig:— Spray nose 3 times a day to overcome occlusion of nostril.

℞.	Acetat, aluminis,	gr. ii
	Mentholis,	gr. i
	Acetanilidi,	gr. ii
	Bismuthi subnit., q. s. ad.	oz. i

M. Sig:— Snuff into nostrils for astringent effect in chronic rhinitis.

Atrophic Rhinitis (Ozena)

This disease is characterized by an atrophy of the turbinals and an apparent change in the secretions of the nasal cavities. The mucous membrane is paler in appearance than in the normal subject and is encrusted with a gelatinous deposit of a greenish hue, which emits a disagreeable odor. The sense of smell, in advanced cases, is entirely lost. The cause is unknown. The crust is found to contain an organism, the bacillus foetidus ozenae, which is responsible for the odor, but it is not believed to be the cause of the atrophic process.

Treatment:

Stimulating the mucous membrane by applications of nitrate of silver has been advocated. Alcohol and glycerine, applied locally, is a favorite remedy. To cleanse the nose of crusts various preparations for absorbing the adherent encrustations have been used. Saturated solutions of the bicarbonate of soda or of borax, are useful for this purpose. A massage of the mucous membrane, with cotton twisted on an applicator, has been recommended by Chiari.

The prescriptions below are often valuable:

℞.	Creolin,	M. x
	Aquae,	oz. ii
M. Sig:—	Apply to nasal mucous membrane.	

℞.	Sodii carbonatis,	gr. v
	Sodii boratis,	gr. v
	Liq. sodae chloratae,	gr. v
	Aquae, q. s. ad.	oz. i

M. Sig:— Apply by means of a hand-spray 3 or 4 times daily.

℞.	Acidii carbolici,	gtts. x
	Aquae calcis, q. s. ad.	oz. iii

M. Sig:— Spray nose 3 or 4 times a day.

Tuberculosis of the Nose

Tuberculosis of the nose is a very rare disease. Internally the miliary form is oftenest seen; though lupus sometimes attacks the skin overlying the nose. Upon the mucous membrane the disease is usually of the miliary type, and consists of deposits within the membrane itself of numerous granules resembling millet seed, hence the term. As the disease progresses these granules coalesce and form ulcers, which often reach a size of 15 or 20 millimeters in diameter. These usually are situated on the turbinals, though sometimes they may involve the septum. The symptoms of this condition are few. In the early stages there may be no pain, the only evidence of the disease consisting of a slight discharge, which may be more or less sanguineous. As ulceration progresses the discharge becomes more pronounced and there may be a sensation of soreness in the nostrils, which seldom amounts to actual pain. If the nasal septum is involved in the ulcerative process, the condition usually ends in perforation which may be accompanied by severe epistaxis.

Treatment:

Tuberculin is sometimes administered; though the favorable reports from the use of this agent have been controverted. Mechanical removal of the crusts, with curettage of the underlying structures, has been advocated. The actual cautery has been used with doubtful results.

Applications of chemical caustics are sometimes made, but the use of these escharotics have been known to greatly aggravate the necrosis. Hydro-carbon oils may be used for the mechanical protection which they afford to the ulcers.

The following prescriptions are of decided benefit:

℞.	Menthol,	gr. xl
	Guaicol,	gr. x
	Ol cupebs,	M. v
	Liq. alboline,	oz. iii

M. Sig:— Spray gently into nose 3 or 4 times a day.

℞.	Camphor-menthol,	gr. xx
	Olei olivae q. s. ad.	oz. ii

M. Sig:— To be used as a nasal spray 2 or 3 times a day.

Syphilis of the Nose

The primary lesion of syphilis is seldom seen upon the mucous membrane of the nose. I have observed but one such case, the infection of which undoubtedly had been carried to that location by the finger nails. Secondary lesions are frequently present, however, and occur coincident with similar mucous patches on the pharynx. Tertiary lesions, though rare, are a very serious menace and if not properly and effectively treated, they often end in collapse of the nose with marked and permanent disfigurement of the patient. In the tertiary stage the turbinals are sometimes involved in the process of destructive ulceration, but in this location the disease is not as serious, from the standpoint of resulting deformity, as when the lesion involves the septum. When this struc-

ture undergoes syphilitic ulceration it, in nearly every instance, necroses until it is perforated and completely lost, with resulting collapse of the bridge of the nose.

Treatment:

Constitutionally the treatment is the same as in any other manifestation of syphilis. Locally the ulcers are to be freed from crusts and the ulcerated areas kept as clean as possible. An ointment containing lanolin and mercurial ointment, of equal parts, may be rubbed gently over the surface of the lesions. The use of this ointment has been much lauded by different writers and has been found by the author to be of some service in freeing the surface of the ulcers of discharges. Ichthyol and vaseline, equal parts of each, have been extensively used. Alkaline sprays are indicated for their deturgent effect.

The indications in this disease are met by the following:

℞.	Potasii iodidi,	dr. vi
	Glycerini,	oz. iii
	Aqua aurantii q. s. ad.	oz. vi
M. Sig:—	Teaspoonful t. i. d. after meals.	
	Useful in tertiary nasal syphilis.	

℞.	Hydrarg chlor corros,	gr. ii
	Kali iodidi,	dr. iii
	Glycerini, q. s. ad.	oz. iv
M. Sig:—	Teaspoonful in water after meals.	

℞.	Pil. hydrarg protoiodid ¼ gr.	No. xxx
Sig:—	Two pills after each meal till gums become tender; one pill thereafter.	

Nasal Polypi

Nasal polypi may be spoken of as outgrowths of connective tissue from the mucous surfaces of the nose. Though several subclassifications are given, for convenience these tumors may be described as nasal mucous and nasal fibrous polypi. The former is a jelly-like, smooth, pedunculated, freely movable and glistening growth, the structure of which closely resembles embryonic connective tissue. The latter is closely related to the mucous variety in structure, differing principally in its greater supply of yellow elastic fibers.

The cause of these nasal tumors is not definitely known. Many theories have been advanced to explain their existence, all of which, though having their supporters among well known rhinologists, have been objected to by various authors. It has been held, and plausibly so, that these growths are due to a relaxed condition of the mucous membrane secondary to hypertrophic rhinitis, this relaxed membrane being drawn down into the nose, thereby becoming pedunculated, the process being aided by their swinging to and fro during the act of breathing.

When an anterior stenosis of one nostril exists, a semivacuum is produced behind it during each inspiration, and this condition long continued, has been mentioned as the principal cause of these mucous growths, the rarefied air sucking down the mucous membrane as before suggested. A number of authors, among whom is Kyle, of Philadelphia, state positively, however, that this gravitation process cannot be the cause of these tumors, though they believe it may assist in forming the pedicle.

Nasal polypi spring from the turbinals, usually their inferior portion. Sometimes, though not often, they may be seen growing from the septum and occasionally they have as their source the opening into the antrum of Highmore. Cases have been reported of polipi springing from the floor of the nose itself some being attached near the anterior orifice.

Nasal polypi, of whatever variety, are most often single, though multiple polypoid growths are occasionally found. Some time ago I removed from a patient over twenty mucous polypi at one sitting. These were generally distributed over septum, turbinals and the roof of nose. They were unusually white and unvascular, the whole number being taken out without creating the necessity of packing the nostril. Nasal polypi may be insignificant in size or they may assume very startling proportions.

These growths are usually attached by a small pedicle, but they sometimes spring from their source in a heavy lobulated mass, with a broad attachment. They are usually light in color, have a glistening appearance and when touched with the probe do not have the resistance of a normal structure. These three points, if kept in mind, would prevent the common error of mistaking hypertrophic inferior turbinals for nasal polypi.

The symptoms of this condition are not unlike those produced by occlusion of the nostrils from any cause. The voice has a peculiar thick nasal intonation. The patient breathes through his mouth which act if long continued, causes the stupid facial expression similar to that obtained in adenoid cases.

Treatment:

The treatment is essentially surgical. Some method should be used which will amputate the tumor close to its base and permit of its removal with as little bleeding as possible. Much hemorrhage obscures the field of operation and greatly retards the proper management of the case. I have used the cold wire snare, cautery snare, cutting forceps, and alligator scissors in this operation, depending upon the nature of the case. Of these, the galvano cautery snare is the most practical when it can be applied, as its use eliminates the possibility of hemorrhage. In some cases, however, it is impossible to engage the pedicle with a snare, because of the body of the polypus obstructing it from view. When this condition obtains biting forceps may be used to pull the tumor away from its point of attachment when its pedicle may be severed with alligator scissors. The remaining portion may be taken off with the biting forceps. The nostril should be anesthetized with cocaine. This drug, in addition to the anesthetic properties, contracts the mucous membrane and greatly facilitates the operation by making the nares more roomy. Adrenalin chloride may be used to advantage, because of its hemostatic effect.

Considerable bleeding usually results during the operation and secondary hemorrhage is of frequent occurrence. Unless the patient can be kept under constant observation the nares should be packed for the first twenty-four hours to prevent this. The nasal packing should not be left in situ longer than this, as its presence endangers the sinuses. It is unnecessary to state that the nose should be thoroughly cleansed before the operation.

The following combinations will be found valuable when the operation is deferred:

℞.	Potassii chloratis,	gr. xx
	Sodii chloridi,	gr. xxx
	Adrenalini chloridi,	dr. iii
	Aquae destil., q. s. ad.	oz. iii

M. Sig:— Spray nostrils to promote freer breathing.

℞.	Sodii perborate,	gr. vi
	Tr. myrrhae,	dr. i
	Adrenalin chloridi,	dr. i
	Aquae dest., q. s. ad.	oz. i

M. Sig:— Spray nose two or three times a day.

Frontal Sinusitis

The cause of inflammation of the frontal sinus may usually be found in some abnormal condition of the nasal passages. This is apt to be a deflected septum which encroaches upon the turbinals. These little bodies are composed of erectile tissue, and free space should be given them in which to expand. When they do not have sufficient space for this purpose, contact and pressure take place, whenever swelling of the turbinals occurs, causing excessive stimulation and coryza. When breathing ceases through the nose, the normal mucus, not being evaporated, thickens and falls to the floors of the nose, or the discharge may form crusts upon the turbinals themselves. Such an obstruction of the nares necessarily interferes with ventilation and drainage of the frontal sinuses. Proper drainage can be carried on in these ac-

cessory cavitives only when the meatuses are free from occlusion. An obstructed nose, with improper ventilation, will cause sinus disease by rarefying the air in the sinuses during inspiration, thus keeping them constantly congested. The capillaries take up the oxygen, and when the openings of the sinuses are occluded the air becomes rarefied, giving rise to a hyperemia of the mucous membrane lining them. In cases of recurring frontal sinusitis, nasal obstruction is almost invariably a predisposing factor. Even the headache complained of may owe part of its origin to the overcrowding of the nasal passages, with consequent pressure upon the filaments of the fifth nerve.

While it is quite probable that an acute inflammation exists in the frontal sinuses during the so called "cold" in the head, a chronic inflammation, with associated polypi formation, or suppuration within the sinus is a comparatively infrequent disease. When such a chronic disease of the sinus exists, the diagnosis is simple. After shrinking the middle turbinals with adrenalin, pus will invariably be seen escaping from the sinus. In the event that the cavity is filled with polypi, and no pus is present, a transillumination will reveal a cloudiness over the affected side. The X-ray is of some service in determining the presence of either pus or granulations, but it is doubtful if the skiagram is as accurate as is transillumination in revealing pathology. Upon several occasions, after X-ray pictures were found to be negative, I have opened accessory sinuses, guided only by the shadow shown by transillumination, and have found pus, granulations or polypi within.

Treatment:

In an attack of frontal sinusitis, either acute or chronic, the first indication for treatment is the pain, as it invariably is this symptom which occasions the visit of the patient. Frequently this is so excessive that it will be found necessary to administer morphine hypodermically. In a small per cent. of cases, only, will a milder analgesic be found sufficient. Pledgets of cotton, saturated with solutions of cocaine and adrenalin, applied between the middle turbinal and the septum, serve a double purpose: they shrink the swollen middle turbinal, thus freeing pressure, with consequent injury to sensory nerve endings, and they permit of a liberation of the retained secretions in the sinus itself. Frequently the ice bag, applied over the sinus, brings relief, though occasionally heat is borne better and seems to offer the patient more relief. In a small per cent. of cases the sinus may be catheterized and irrigated, this process being somewhat facilitated by the amputation of the anterior end of the middle turbinal. Regardless of what treatment is instituted, surgical interference will sometimes have to be resorted to.

The following formulæ are beneficial:

℞.	Cocaine hydrochlor,	gr. x
	Menthol,	gr. v
	Camphor,	gr. x
	Ol. rosae,	dr. i
	Liq. vaselin,	oz. i

M. Sig:— Spray nose in an acute frontal sinusitis.

℞.	Acid. carbolic,	gr. ii
	Adrenalin chloridi,	dr. ½

Glycerini,	dr. ½
Aqua dest. q. s. ad.	oz. viii

M. Sig:— Spray nose to reduce congestion of turbinals and promote drainage in frontal sinusitis.

Operation of the Frontal Sinus

The intra-nasal operation is not to be advised. A number of times I have found it necessary to open the sinus from without, after the intra-nasal operation had been performed, and at each time have found the sinus bearing evidence of marked pathology. Before doing the extra-nasal operation the anterior end of middle turbinals should be amputated. It is well to do this the day before the time set for the operation. The technique of this procedure is simple and is not unlike that outlined in the description of the mastoid operation. An incision is made through the skin from the median line outward for about two inches, the eyebrow having previously been shaved. If the incision is made to follow the course of the eye brow, it will materially enhance the cosmetic effect. The skin and periostium are now elevated and held in position by retractors. An opening is made over the sinus with a chisel and the periostium within the sinus is exposed. A probe should be used now to explore the sinus, thereby eliminating the possibility of confusing this membrane with the dura. After the cavity is thoroughly cleared of débris, granulations, or polypi, the mucous membrane lining it should be entirely curetted. A probe is now passed into the fronto-nasal duct to ascertain its direction. As soon as this is done a curved rasp is slipped into the duct, and by a series of to and fro movements its lumen is enlarged to a diameter of four or five milli-

meters. A rubber drain is now passed through the intranasal duct and left in situ. The margins of the wound are then approximated and stitched with silk, or silk worm gut, and the dressings are applied.

Empyema of the Antrum of Highmore

The antrum of Highmore is perhaps more frequently affected by inflammatory and suppurative processes than any of the other accessory sinuses, though a diagnosis of existing disease within its cavity is less frequently made than it is in similar conditions of the other sinuses of the nose. The reason for this may be that the pain incident to a diseased antrum is often referred to the eye or the temporal region of the head, is attributed to neuralgia or eye strain and is thought to be suggestive of a reflex condition resulting from a disordered stomach, misplaced uterus or other abnormal abdominal or pelvic organs. The pain, too, is often referred to the teeth the antrum being suspected only after all the dental defects are corrected with no cessation of the pain.

The location of this sinus and its imperfect drainage makes it particularly liable to involvement. The ostium maxillary, or its normal opening, its only communication with the outside world, lies high above its floor, sometimes even as high as the floor of the orbit. With the position of this normal opening so unadapted to adequate drainage, except where certain positions of the head are assumed, it is not strange that discharges are easily pent up and become infected with resulting sinusitis. Obstruction of this opening occurs from various causes. Hypertrophic rhinitis, with swelling of the middle or inferior turbinals, may obstruct the normal opening. Polypi

springing from the other sinuses may wedge themselves between the turbinals so that drainage of the antrum is entirely cut off. An acute coryza, with incident swelling of the mucous membrane, may close the opening or crusts may form between the turbinals, their presence acting as a dam, entirely shutting off the cavity. Deviated septi are often instrumental in producing a maxillary sinusitis, and spurs of the septum, encroaching upon the normal opening, are very prolific in producing a like result.

The maxillary sinus is sometimes infected by an ulcerative process at the roots of the bicuspid or first molar teeth which often jut into the cavity being covered only by the mucous membrane lining it. Extraction of these teeth sometimes open up avenues of infection from the mouth. Errors in nasal and dental surgery not infrequently leave an infection of the sinus. Packing the nose after nasal operations or as a means of controlling hemorrhage render liable to infection not only the antrum of Hymore but the other sinuses as well. About two years ago I removed from an infected antrum a dental bur which had been lost in the sinus during the excavation of a first molar tooth at some previous time.

The symptoms of maxillary sinusitus are first, pain. This may be periodical or constant but is usually worse during the night or early morning hours. As has been already noted the pain may be in the gums, teeth, walls of the antrum, temples, eye, or it may be far removed from the point of infection, as, for instance, the occiput, a not unusual location. The pain is nearly always increased by stooping. This position also causes more or less vertigo. Because of its general distribution and as

disease of the other sinuses may occasion pain in the same regions, no particular stress can be put upon this feature of the disease as a factor in determining the nature of the condition. The tenderness produced by pressure is of some service to us in diagnosis. There is usually soreness to the touch in the gums over the cheek bone and the lower floor of the orbit. The skin over the sinus is sometimes drawn taut and may be glistening and reddened. Where a pronounced empyema of the antrum exists, the thin walls may bulge causing a crowding upward into the orbit and a consequent protrusion of the eye ball. A bulging of the inner wall of the antrum may occur which, though seldom seen as surely indicates antral empyema as does a protrusion of the posterior wall of the auditory canal mean pent up puss or cholesteatoma in the mastoid. The teeth are sore, and more or less discomfort is experienced during the act of chewing. I once operated a case which had a pronounced empyema of the sinus whose principal symptom, besides pain in the temporal region, was a soreness of the gums and an inability to masticate her food.

The temperature is usually elevated, though it seldom runs over 101° or 102°. Sometimes there is no rise whatever in the temperature. If the drainage is not entirely cut off pus will be seen in the middle meatus between the superior and inferior turbinals. This oozes constantly when the patient is erect or lies on the side opposite to the one affected. When lying on the back or on the affected side no discharge will be seen. This accounts for the freeness of the discharge in the mornings, the patient, as a matter of course, maintaining during a part of the night, positions of the head which hold

the normal opening above the level of the pus. While the patient is in the erect position the pus flows over the top of the inferior turbinal. If it is wiped away with cotton on a probe, it quickly reappears. This symptom should always be looked for and when found, provided the pus oozes up from under the middle turbinal, is pathognomonic of empyema of the antrum.

Treatment:

The treatment is mechanical and may be divided into two classes, palliative and radical. The palliative treatment consists of daily douching the antrum through its normal opening. This, though not often fruitful of good results, should be resorted to before a radical operation is attempted. The old method of removing a first or second molar tooth and irrigating the cavity through the opening left by it is now condemned because of the uncertain results, to say nothing of the impropriety of destroying a good tooth.

The intra-nasal operation gives very good results in cases of moderate severity where there is no evidence of bony necrosis. This consists of opening the nasal plate of the antrum and inserting a drain through which the cavity is to be washed daily. The front end of the inferior turbinal is to be removed preparatory to opening the antrum. With the room offered by this procedure it is an easy matter to curette through the antral wall and enlarge the opening by means of the Rongeur forceps. This operation may be accomplished under cocaine anesthesia in all but the most sensitive patients.

In severe cases of necrosis the radical or Caldwell-Luc operation should be chosen. Under general anesthesia

the lip should be retracted and an incision 1½ inches long should be made over the roots of the molar teeth extending through the periosteum down to the bone. The periosteum is now elevated and with a mastoid curette an opening is made through the antral wall and is enlarged sufficiently to admit the index finger. The cavity is now explored. Polypi, if present, should be removed, and their pedicles thoroughly curetted away. Areas of necrotic tissue should be sought for, and, when found, completely obliterated. An opening is now made through the inner wall into the nose, the inferior turbinal having been previously removed, and an iodoform packing introduced, its distal end extending into the nasal cavity. The external wound is now closed, subsequent dressings being applied through the nasal opening. The sinus should be re-dressed daily for a week or so after which the dressing may be discontinued, but daily irrigation with antiseptic solutions should be carried out until all evidence of suppuration ceases.

The following formulæ are of service during period before operation:

℞.	Aristol,	dr. ii
	Iodoform,	dr. ii
M. Sig:—	Blow into nose in empyema of the antrum.	

℞.	Iodoformi,	gr. vi
	Menthol,	gr. v
	Lanolin,	dr. iii
	Liquid vaselin,	dr. v
Ft. Ung.		
Sig:—	Apply to the nostrils with cotton swab every day.	

Fracture of the Nose

This term is usually paradoxical, for a fracture of the nose is most often not a fracture, but rather a displacement of the nasal bones from their natural positions. In a very small per cent. of cases, where the trauma is due to a small blunt instrument, the nasal bones may be fractured, as well as dislocated, the bridge of the nose being thrust inward. The deformity usually seen, however, is that of a twisting of the bony structures, or a lateral bending, this being due to the bones having been pushed to one side during the depression of the dislocated areas. The impaction is usually so pronounced that little crepitation can be felt, but as the dislocation is being reduced the bones may be heard to take their normal positions with something of a click. Associated with the injury is hemorrhage, ecchymosis, and swelling, as well as a moderate degree of pain.

Treatment:

Reduction is accomplished by replacing the depressed bones with an elevator. Almost any slender instrument will serve this purpose in an emergency. I once reduced, with good results, a badly fractured nose with an ordinary lead pencil. A pair of blunt pointed scissors makes an excellent elevator for this purpose. When the bones are replaced they retain their position in nearly every instance, without further interference, making the use of the internal splint unnecessary. An external splint of plaster of paris, which is poured while soft upon the nose and allowed to harden, is a splendid arrangement for maintaining normal contour. The internal splint, if it is large enough to be of service, causes

perpetual irritation, besides it enhances the danger of infection to the accessory sinuses by obstructing their drainage. The likelihood of infection is very much increased when there is trauma to the mucous surfaces. Another objection to the use of the internal splint is that it has to be removed frequently to be cleaned, which process is a source of great discomfort to the patient. This crude method of treating nasal fractures, fortunately, is rapidly becoming obsolete.

Abscess of the Nasal Septum

This is likely to occur as the result of trauma, followed by a hematoma between the perichondrium and the cartilage, which becomes infected. Occasionally abscess of the septum is seen in children, complicating the acute eruptive fevers, or the disease may be a sequence of erysipelas. Cases have been reported which were associated with chronic atrophic rhinitis, where erosion of the septum had previously existed. When the abscess is allowed to run its course, evacuating itself spontaneously, there is apt to result a serious necrosis of the septum, with possible collapse of the bridge of the nose.

Treatment:

As soon as the condition is discovered, at which time bulging of either wall will be present, the abscess should be freely incised. After the pus has been liberated there will be left a rather large opening, or sac, which should be washed out regularly with some antiseptic solution and then filled with bismuth paste. The predisposing condition should have appropriate treatment.

The following formulæ are indicated in the early stages:

℞.	Morph. sulph.	gr. ii
	Phenacetin,	dr. i
	Aspirini,	dr. i
	Ft. Chart, No. x	

M. Sig:— One every four hours during prodromal stage of abscess.

℞.	Creosoti,	gtts. xx
	Tinct. myrrhae,	dr. iii
	Glycerini,	oz. i
	Aquae, q. s. ad.	oz. viii

M. Sig:— Spray nose 4 or 5 times daily.

Deflection of the Nasal Septum

Deflection of the nasal septum is frequently due to trauma. It is more apt to happen during the boisterous period of youth, though after it occurs, it may remain unrecognized until later in life. Not long ago I observed such an injury in a boy who had been thrown from a horse a few months before. There was a marked deviation of the septum to the left; though an office case record made three years previously, at which time I treated him for epistaxis, indicated that at his former visits there was no deformity of this nature. It is said that some deflections may be the result of injury to the nose at birth, though this is questionable. It is probable, however, that a certain per cent. of deviations occur during the growth of the child, this being due to the lack of uniformity in the development of the septum and the

adjacent bony structures. These structural changes of the nose are not infrequently a sequence to the habit of mouth breathing during childhood.

Treatment:

Aside from palliative measures directed toward the rhinitis, which is a frequent complication, there is no treatment except surgical correction. When the deviation is sufficiently pronounced to warrant interference, a sub-mucous resection of the septum should be made.

Submucus Resection of the Nasal Septum

Anesthesia:

While this operation, in timid patients, is often done under general anesthesia, the results are usually not so good as when local anesthesia is used, because in no other operation is it so necessary to obtain the complete cooperation and assistance of the patient. Cocain is the most satisfactory anesthetic in this operation. A paste should be made and painted upon the septum at the point where the initial incision is to be made after which a 4 per cent. solution may be applied with pledgets of cotton to the remaining areas to be anesthetized.

Technique of the Operation:

The incision through the mucous membrane and the perichondrium should be made from the side towards which the septum is deviated. It should extend from the roof of the nose to its floor, about 15 or 20 millimeters posterior to the nasal orifice. The incision is best made with a Schwab's knife because an instrument with a sharp point is more liable to penetrate too far and wound the

mucous membrane upon the opposite side. After the incision has been carried through the mucous membrane and the perichondrium a sharp pointed curette is placed against the cartilage and, under slight pressure, should be made to cut a small opening through its substance. A blunt elevator may now be insinuated through this opening and be gently swept upward and downward until the cartilage is freely divided from apex to base. An elevator is now inserted and the mucous membrane and perichondrium, upon the side at which the initial incision was made, are freed from the cartilage. A smaller instrument, somewhat curved, is then passed through the opening made in the cartilage and the mucous membrane and the perichondrium is freed in the same manner as upon the opposite side. The swivel knife is now inserted through the initial wound and is made to engage the cartilage. With a firm sweep it is driven upward to the junction of the bone and cartilage and then is made to follow the arc of a half-circle, after which it is drawn forward to the point of starting. This leaves an eliptical segment of cartilage which may be grasped by the forceps and removed. The bony portion of the septum is now bitten out by a Wilson's bone forcep. The greatest degree of deflection is usually at the crest of the vomer, and it is very important that this portion of the bony septum be entirely removed if satisfactory results are to be obtained. The nose is now gently packed on either side using for this purpose long strips of sterile gauze. Before the dressings are applied, it is of advantage to coat the septum on either side with sterile vaseline, so that no trauma to it may be produced as the dressings are withdrawn.

Adenoids

Before the days of Meyer who, in 1870, first demonstrated the existence of hypertrophies of the pharyngeal tonsil, the symptoms incident to adenoids were attributed to a general debilitated condition of the system. Up to that time as a consequence of this faulty pathology vigorous alterative and tonic treatments were adopted with the belief that in them lay the only hope of a cure. It is only within the last fifteen years or so that the condition has been generally recognized by the medical profession and that radical operative treatment has been instituted for its relief.

In view of the fact that the old and empirical treatment has been evolved into the only rational one, and that the condition is now generally recognized by the profession, it is surprising to note the large percentage of these cases of adenoids in children that are being neglected. The close observer is confronted almost daily on the streets and elsewhere by children whose general health is being impaired and whose development, both mental and physical, is being arrested by this condition. Many of these cases present the gravest complications and wear upon their faces an expression of listlessness which the majority of these little sufferers cultivate. There is, however, a class of adenoid children who do not present the typic dull appearance, yet a marked change in facial expression is nearly always present. The eyes are set farther apart than normal, the nose is broad and flat with obliterated lines about the alae nasi, the upper lip is short and protrudes, the teeth are irregular, and the chin recedes. The mouth is held open in order to facilitate breathing, and is enlarged at the expense of the nasal fossae. The result

of these changes is a dull and inferior expression which is almost unmistakable to the most casual observer.

Unfortunately, the facial expression is not the worst feature of this condition. These growths affect a child's mentality, predispose it to ear disease and deafness, and materially interfere with its physical welfare. These children rest badly at night, their sleep is disturbed by dreams and nightmares, and is often attended by tossing about in bed. They waken in the morning with a feeling of general malaise and remain tired and worn out during the day. They are in most cases morose and peevish. A previously cheerful disposition is gradually transformed into a melancholy one, and a bright and sunny child becomes dull and stupid.

As a result of the absence of nasal respiration produced by the blocking of the post-nasal space, the air passes into the lungs without being warmed and moistened in the nose. This often accounts for the continuous and harassing cough with which these little patients suffer. The irritation from cold or dust causes a thickening of the epithelial lining of the air cells, giving rise to a faulty oxygination and imperfect elimination of carbon dioxide. This, in turn results in malnutrition, and often in reflex symptoms. Hay fever, Saint Vitus dance, epilepsy, persistent headache, bed-wetting and diarrhea from exaggerated peristalsis, have been reported by different observers as associated symptoms of pharyngeal adenoids.

When the nasal stenosis is marked, the continued difficult breathing causes a deformity of the elastic chest walls commonly known as pigeon breast, a condition in which the upper part is prominent and the lower parts con-

tracted. This deformity is nearly always present in well marked cases.

If we examine the nares and pharynx of a case of adenoids, especially if it is a pronounced one, we find a catarrhal condition present. In the pharynx this is brought about by the irritation caused by the mouth breathing. The dust from the inspired air is continually deposited upon the mucous membrane, while the air not being properly humidified in the nose, keeps the throat parched and dry by the absorption of its normal mucus.

Treatment:

Complete extirpation of the mass is the only treatment of value. This may be performed under local anesthesia; it is usually more thoroughly performed with the child anesthetized. Ether is probably the safest anesthetic. Chloroform seems to be particularly dangerous in these cases, judging from the fatalities that have been reported from its use. When the operation is done under local anesthesia the child may be wrapped in a sheet and held in the lap of an assistant with the head resting on the assistant's shoulder. A mouth gag should be inserted and a Lowenburg forceps guided by the index finger introduced over the hypertrophy, and as much as possible of it be bitten off. The Gottstein curette should now be inserted and carried high up into the vault of the pharynx, and while firm pressure is being exerted be made to describe the arc of a large circle. If the instrument is properly applied one sweep will usually remove the remainder of the growth, or the operation can be done with the Gottstein curette alone. The operator should

not be satisfied until the pharynx is thoroughly explored with the finger for any remaining hypertrophies which, if found, should be curetted away.

The following formulæ have some therapeutic value:

℞.	Glycerit. acid. tannici,	dr. iv
	Aquae, q. s. ad.	oz. iv
M. Sig:—	Spray nose morning and night.	

℞.	Acidi carbolici,	gr. v
	Ext. pini Canadensis dest.,	M. x
	Liq. vaselin,	oz. i
M. Sig:—	Spray nose for anesthetic effect, of carbolic acid.	

Anatomical Malformations Resulting from Adenoids

Angle has been instrumental in working out the probable causes of structural changes of the jaw and face resulting from obstructed nasal breathing. His theory is the most plausible one that has been offered as an explanation of the anatomical changes existing in these cases. He believes that the normal contour of the mouth is maintained, to a large degree, by the tongue pressing against the alveolor processes from within and that, when mouth breathing is established, the tongue, because of the open mouth, falls back and robs the alveolar processes of this support. The open mouth also causes a pressure on the alveolar process from without by action of the buccinator, digastric, and zygomatic muscles. When a contraction, or drawing in of the lower part of the superior maxillary, occurs, the palate processes act as fulcra; consequently, the bony attachments above are

spread apart. This spreading causes a coincident spreading of the nasal bones, which gives rise to the flattened appearance so characteristic of adenoids. Elevation of the roof of the mouth and the dropping down of the nasal bridge will cause other structural changes, the most harmful of which are the deviated septum and maloccluded teeth. Dental malocclusion is due to the fact that the teeth are normal in size and the jaw is smaller than normal, and therefore room is not afforded the teeth without this overlapping process. Such a deformity leaves a very unsightly mouth and one which does not perform its physiological function.

Foreign Bodies in the Nose

Cases of foreign bodies in the nose are of frequent occurrence, but fortunately their presence causes the patient more inconvenience and annoyance than immediate danger. If their removal is delayed too long, however, a suppurative condition from erosion of opposing surfaces is apt to be set up, which may extend to the sinuses or the infection may follow up the eustachian tubes and invade the tympanic cavity. These cases are usually found in children whose faculty for experimentation is great. I have seen only two cases in adults, one being in a hysterical girl, the foreign substance having been placed in the nose presumably to excite notice which would occasion the sympathy of a relative.

Treatment:

The removal is simple. The child should be placed in the lap of an assistant who is strong enough to overcome its struggles. A speculum should be introduced

and, with a reflected light, the substance should be located and grasped with forceps if possible. Buttons and similar substances are not readily engaged by the forceps. In these cases, a small hook may be passed over the foreign body and it then may be readily drawn out. Some surgeons advocate pushing the foreign body back into the throat, but efforts to do this frequently wedge it under the turbinals and, should it be pushed back, there is danger of its dropping into the larynx.

Larva (Screw Worms) in the Nose

In this climate it is not unusual for the nose to be invaded with maggots or "screw worms." This is a grave condition and one which calls for immediate and radical treatment, as a number of deaths have occurred in neglected cases. They may be confined to one side or may be generally distributed throughout the fleshy portion of the nose or may even invade the sinuses. The diagnosis is easy, as the parasites are blown from the nose during the patient's frantic efforts to obtain relief.

Treatment:

The treatment which, if applied in time, is specific, consists of ten per cent. chloroform in glycerin, syringed into the nose. This should be done hourly until all evidence of the existence of maggots disappears.

Nose Bleed (Epistaxis)

Violent epistaxis, whether traumatic, the result of broken down neoplasms or due to constitutional dyscrasias, is a condition which has caused nearly every phy-

sician no little concern at some time during his professional life.

Probably the most trying of epistaxis cases are of traumatic origin, and these occur oftenest where the facilities for examination and treatment are as bad as could be possible. These cases are usually surrounded by a host of anxious friends and interested onlookers, and if the physician fails to control the hemorrhage the condition becomes very unpleasant, if not dangerous, to the patient and extremely embarrassing to the doctor.

Treatment:

Although a number of methods of controlling nasal hemorrhage are advocated, such as the insufflation of powdered alum, spraying with astringent solutions like acetate of lead, sulphate of copper, or tannin; applications of collodion to the bleeding surface, the administration of ergot, etc., it is nearly always necessary, in cases sufficiently severe to necessitate the summoning of a physician, to resort to some mechanical method of treatment if the desired results are to be had.

Perhaps the first thing indicated in the majority of cases is the application of pressure to the bleeding surfaces, by means of pledgets, of gauze or absorbent cotton, with or without astringent solutions. The bleeding surface should be sought for, if possible. That is a very easy matter in the doctor's office, but in emergencies it is usually impossible to locate a spurting vessel because of the lack of facilities for making examinations. In such cases, pledgets of cotton saturated in a styptic, preferably adrenalin chloride, may be pushed up into the

nares at random, with the hope that the point of bleeding may be covered and the hemorrhage stopped. Pieces of string should be fastened to the plugs to facilitate their removal.

In case of severe traumatism, with violent and dangerous hemorrhages, or in cases which resist all the simpler methods of treatment, plugging the nares, both posteriorly and anteriorly, should be resorted to. This is rather a painful procedure, and is not often borne gracefully by the patient, but is often necessary in the severe cases to save life. When the posterior and anterior nares are to be plugged the operator proceeds in the following manner. A small catheter is passed through the nostril and is caught with forceps as it glides along the pharyngeal wall. It is then pulled through the mouth, grasped by the operator, and a piece of string, to which is attached a plug of wet cotton, is tied to it. The catheter is now withdrawn through the nose, bringing the string with it. The physician now makes tension on the string with one hand while the finger of the other is passed into the mouth, and the plug is pushed above the soft palate and pulled into position. The string in the anterior nares is now drawn tight and tied over a plug of cotton outside the nostril. This is the last resort in nasal hemorrhage, and will control, while in position, practically all cases of nose-bleed.

Nasal tampons should not be kept in place any longer than is necessary to cause the formation of a clot. If allowed to remain too long, infection of the sinuses and other conditions may follow the putrefaction of secretions and the retention of pus. The tampons should be removed in at least twenty-four hours, to be replaced,

if necessary, after the nose is cleaned by gently syringing. A day or two after the hemorrhage is checked, the nares can be freed from clots by injections of mild astringent solutions and the patient be dismissed, with instructions to avoid violent exercise for a time.

DISEASES OF THE THROAT

Syphilis of the Pharynx

Mucous patches occur upon the pharynx during the secondary stage of syphilis, but they soon disappear regardless of whether or not anti-syphilitic treatment has been administered. This is often an unfortunate thing for the patient. When these early manifestations of the disease subside, he often considers himself well, and, if he has been taking treatment, gives it up entirely. The result is that the disease lies dormant for months, or years, after which time the tertiary lesions appear. A tertiary syphilitic lesion of the pharynx is characterized by an ulcer, rather deeper than that of tuberculosis, which has a clear cut margin with "rounded off" edges. Instead of the indistinct coloration found in tuberculosis ulcers, the lesions of syphilis have a distinct bluish blush with much infiltration of the discolored areas. There are present abundant secretions which are purulent in nature.

Treatment:

A vigorous treatment consisting of mercury, the iodides and neo salvarsan must be administered. Local treatment is of little value. The various antiseptic and sedative washes may be used for their cleansing and pal-

liative effect. When the ulcers show no tendency to heal, they may be touched with the tincture of iodine, or with strong solutions of the nitrate of silver. If the general treatment is well borne the ulcers will usually heal.

The following formulæ are suitable in the majority of cases:

℞.	Hydrargyri, chloridi corros.,	gr. i
	Alcoholis,	dr. i
	Mellis rosae,	dr. iii
	Tinct. myrrhae, q. s. ad.	oz. viii
M. Sig:—	Gargle before and after meals.	

℞.	Menthol,	dr. i
	Liq. aboline, q. s. ad.	oz. iv
	Misce.	
Sig:—	Use as a spray every 2 hours.	

Retropharyngeal Abscess

This condition, usually occurring in the very young, consists of a pus formation in the pharyngeal wall. Frequently the pus may make its way through the underlying structures and invade the cervical lympahtices. It is most often found in debilitated subjects, or in children of tuberculous or syphilitic parents. The most noticeable symptoms of this condition, with the exception of pain, is dyspnea. This may be so violent that the patient dies of suffocation before the abscess ruptures or is incised.

Treatment:

This consists first of the prompt evacuation of the retained pus. It is a wise precaution to have the head hung

low before the incision is made, else the pus rushing into the trachea may cause suffocation; or it may be aspirated by the lungs and septic pneumonia result. The operation, where this is possible, should be performed without an anesthetic. Following the evacuation of the pus, the constitutional symptoms in evidence should have appropriate attention.

Tuberculosis of the Pharynx

This is evidenced by an ulcerated area upon the pharyngeal wall, more rarely upon the pillars of the fauces, usually occurring during the course of pulmonary tuberculosis. The ulcers have a peculiarly characteristic appearance. They are very slightly excavated, but their edges dip down into the surrounding tissues. Their encroachment into the normal mucous membrane has much the appearance of the petals of a flower. There is very little swelling attending this condition and the circumscribed coloration is indistinct. The discharge from the areas involved is scanty, though tenacious and ropy. There is usually temperature, but this may be looked upon as being pulmonary in origin.

Treatment:

There is often severe pain attending tuberculosis of the pharynx, this being more intense during the act of swallowing. For the relief of this symptom a solution of cocaine may be sprayed upon the pharyngeal wall before each feeding. Phenol, applied locally, has analgesic properties but its use rather aggravates than subdues the condition. Aristol has been much lauded as a local ap-

plication. During the last year chalmoogra oil has been extensively used with very favorable results.

The following formulæ are often of great utility:

℞.	Cocaine,	gr. x
	Iodoformi,	gr. x
	Zinc. stearat,	gr. xx
Sig:—	Blow into the throat with tuberculous ulcers to relieve pain.	

℞.	Tinct. guaiaci ammon.	dr. i
	Liq. potassae,	oz. i
	Tinct. opii,	dr. i
	Ag. cinnamoni, q. s. ad.	oz. v
Sig:—	Gargle every three hours.	

Foreign Bodies in the Lower Pharynx

There is no more distressing condition, nor one which calls for more prompt or heroic treatment, than that of the foreign body in the lower pharynx. The size of the substance seems not to influence materially the distress experienced. The patient's appearance is usually an alarming one. He struggles for breath, the face is livid, and the eyes bulge. The patient either dies immediately or the anesthesia from suffocation relaxes the spasm which recurs after a short period.

Treatment:

The foreign body may sometimes be removed with the finger. Pounding the patient on the back may help him in his efforts at expulsion. Shaking him violently with his head downwards may be tried. The physician must

not be too persistent in these attempts, and some kind of an opening in the larynx or trachea must be made as soon as possible to preserve the patient's life. The larynx is easily gotten into and the rudest operation is preferable to a dead patient. If there is no relief from a laryngotomy a tracheotomy should be performed.

Mycosis of the Tonsils

This is a parasitic infection of the pillars of the fauces and the mucous surface of the tonsil. The spores of the organism are almost always present in the mouth, and it is only after bodily resistance is lowered by disease, that a suitable soil is provided for their permanent growth. After the infection is well advanced, there is usually experienced a feeling of fullness in the throat, with the sensation of something pricking the fauces, especially during the act of swallowing. On inspection a number of white masses may be seen adhering to the tonsil and the faucial pillars, which, when removed leave a bleeding surface.

Treatment:

The condition is difficult to eradicate. Attention must be given to the patient's nutrition. The patches are to be touched with a chromic acid solution of twenty per cent. with pure tincture of iodine, or with the actual cautery, and an antiseptic spray is to be prescribed. If the tonsils are extensively involved, with the infection invading their crypts, they should be removed.

Either of the following prescriptions will be found useful:

℞.	Hydrarg. chlor. corros.	gr. i
	Glycerini,	dr. iii
	Alcoholis, q. s. ad.	oz. i

M. Sig:— Apply to tonsils once or twice a day.

℞.	Acidi carbolici,	gr. xxx
	Glycerini,	dr. i
	Vaselini, liquid, q. s. ad.	oz. iii

M. Sig:— Use as a spray 2 or 3 times a day.

℞.	Resorcini,	gr. xx
	Glycerini,	oz. ii
	Aquae destillatae, q. s. ad.	oz. v

M. Sig:— Use as a spray 2 or 3 times a day.

Acute Tonsillitis

Acute tonsillitis is a condition easy of diagnosis, as the clinical picture presented is typical. The disease is usually ushered in with a feeling of chilliness, followed by a rise in temperature. The pain in the throat is not excessive at first, though the muscular soreness about the body, due to absorption of toxins from the throat, may result in more or less distress. There is often severe pain referred to one or both ears. The inflammation in the throat affects more than the tonsil tissue itself. Besides involving the pillars of the fauces, it often extends to the pharynx and uvula. Tonsillitis, in the acute form, is self-limited, though one attack, instead of protecting the patient against future involvements, predisposes to further trouble in that direction.

Many of the chronic hypertrophic tonsils seen seem to be the result of previous acute infections of these glands. Occasionally the condition ends in an attack of

peritonsilar abscess, but this occurs seldom, except in cases that have previously had one or more attacks of severe acute tonsillitis. The disease may be epidemic. Collidge believes that when it appears in this form, it often has as its source some contamination of the food supply of the community. This theory was anticipated by Severn (*British Medical Journal*) who notes that in an epidemic of tonsillitis occurring in 1897, nearly every case affected was supplied with milk from a certain dairy. This dairy was inspected and immediately closed, after which the epidemic ceased.

Treatment:

Internally, purgatives, anti-pyretics and analgesics are indicated. Locally, the nitrate of silver in solutions of ten per cent. is said to be sometimes abortive. Tannic acid in glycerine, one drachm to the ounce, and guaiacol in solutions of eight per cent. are sometimes of service. Phenol solutions, besides acting as germicides, have a local anesthetic effect. Gargles of hot normal salt solutions are often very gratifying to the patient. Ice packs to the throat are useful.

The prescriptions below will be found effective:

℞.	Guaiacol,	dr. iii
	Ol. amygdalae dulcis, q. s. ad.	oz. i

M. Sig:— To be applied with cotton swab in acute tonsillitis.

℞.	Tinct. aconiti,	gtts. xx
	Sodii salicylatis,	dr. i
	Syrupi aurantii florum,	oz. ii
	Aquae destillatae, q. s. ad.	oz. vi

M. Sig:— Teaspoonful every two hours.
Useful in acute tonsillitis.

℞.	Argenti nitratis,	gr. xxx
	Aquae destillatae,	oz. i

M. Sig:— Apply with swab once daily.
Useful in acute tonsillitis.

Chronic Tonsillitis

Under this heading is classified tonsils which have seen several acute attacks and have lapsed into a condition of chronic infection. Their crypts are usually filled with accumulated secretions, the infection from which may break through their barrier occasionally causing the familiar peritonsillar abscess. When this occurs enlargement of the cervical gland will result. The danger lying in this type of tonsil has not been recognized until recent years.

Treatment:

The treatment of chronic tonsillitis is usually a useless procedure. Internally cod liver oil, iron, and arsenic have been advised. Painting the tonsils daily with weak solutions of nitrate of silver has its advocates. Expressing the contents of the crypts and applying iodine and glycerine to the openings has been advised. Chemical and galvanic cauteries to reduce the enlargement of the tonsil has now been superceded by milder forms of treatment. The X-ray, applied to the neck over the tonsil, is frequently used, but this method of treatment unfortunately does harm to the parotid and sub-maxillary glands. Cleansing the tonsil crypts of retained food

and other débris, by the use of gargles and sprays, may be considered a rational method of treating the disease.

The following formulæ will give some relief:

℞.	Calcis chlorat.	dr. ii
	Alcoholis,	dr. iii
	Aquae dest. q. s. ad.	oz. iii

M. Sig:— A teaspoonful in a glassful of water as a gargle.

℞.	Acidi salicylici,	dr. i
	Liq. ammonii acetatis,	dr. i
	Glycerini,	oz. i
	Aquae, q. s. ad.	oz. vi

M. Sig:— A tablespoonful in water after each meal.

℞.	Acidi tannici,	dr. i
	Alcoholis,	dr. iii
	Aquae camphorae, q. s. ad.	oz. viii

M. Sig:— Gargle several times a day.

Peritonsillar Abscess (Quinsy)

A suppurative inflammation, originating in the tonsil, and extending to the peritonsillar structures, is a very painful affection, which interferes with the movement of the jaws and makes swallowing difficult, or even impossible. As the disease progresses pus forms between the fauces and the tonsil, and after a period, ranging all the way from a few hours to several days, ruptures spontaneously. There is apt to be enlargement of the lymphatic glands, and always there is increased temperature and general distress. The severity of the disease will, however, depend largely upon the constitutional condition of the patient.

Treatment:

Before the suppuration has occurred a brisk purgative should be administered and an analgesic be prescribed to lessen the extreme pain experienced during the formation of the abscess. The tissues may be scarified, even in the early stages, with beneficial results, as tension is thereby diminished. When pus forms, the point at which the greatest bulging and pulsation exists should be freely incised. It is well to enlarge the opening thus made with a pair of large hemostatic forceps in order to promote free drainage, though this will be found to be rather a painful process. The wound should not be allowed to close till suppuration ceases.

The following prescriptions are of decided benefit after the abscess has been incised.

℞.	Ammonii bromodi,	dr. i
	Tinct. lobellae,	dr. ii
	Spt. aetheris comp.	dr. v
	Syrupi acaciae, q. s. ad.	oz. iv

M. Sig:— A teaspoonful in water every 2 hours for relief of pain.

℞.	Ext. grindeliae fludi,	dr. iii
	Ext. belladonnae fl.	dr. i
	Potassii iodidi,	dr. ii
	Glycerini, q. s. ad.	oz. iii

M. Sig:— A teaspoonful every 3 hours.

℞.	Kali iodid,	dr. i
	Aquae menthae pip.	oz. i
	Syrupi simplici, q. s. ad.	oz. iii

M. Sig:— A teaspoonful every 2 hours.

Infected Tonsils and Rheumatism

In considering the relation of infection of the tonsils to rheumatism, the first question which naturally arises is: what is rheumatism? The older theories, setting forth its etiology as depending upon an excess of uric acid in the blood or in exposure from cold, have entirely given way to the newer belief that the condition is due to an infection.

It is very evident that tonsil infection does get into the blood stream. It has been proven that absorption from the tonsil takes place by way of the lymphatics. This was demonstrated several years ago by Wright, who smeared the tonsil of a guinea pig with butter containing carmine and later found the carmine in the lymphatics of the neck. Some time ago I was sufficiently interested in this subject that, in order to get some first-hand information, I sent out a number of letters of inquiry to laryngologists all over the country and received from them the reports of 320 cases of arthritis, occurring coincident with chronicly diseased tonsils, 250 of which cleared up after the removal of the tonsils.

The pathogenic organisms responsible for rheumatisms are carried into the tonsil tissues through crypts. These crypts are 12 or 14 in number, some of them with free openings and others closed, either congenitally or from frequent inflammation. Very often they unite with each other, large cavities forming between them, which are filled with the products of decomposition.

The plica of the tonsil, an embryonic tissue which is a part of the anterior pillar, often stretches over the tonsil, closing the crypts. This is a very important factor in producing infection. In the cases of arthritis, asso-

ciated with necrotic tonsils, coming under my observation, the largest percentage have had over-developed plica, forming hoods which covered over and closed all the upper crypts. In one case I found the plica entirely covering and submerging the gland. All of these plica-hooded tonsils contain a tremendous amount of débris, the age of which can be estimated only by its foul odor.

There does not seem to be any question, at this time, in reference to the necessity of tonsillectomy in arthritis cases where diseased tonsils are present.

Indications for the Removal of the Tonsils

While conservatism is always salutary in surgery, we must recognize that there are undoubtedly a number of conditions which show that the tonsil acts as a portal of infection and should be removed. Among these may be cited recurrent arthritis, acute Bright's disease when infection of the tonsils exists, enlarged cervical glands, pericarditis or endocarditis, certain remote reflexes such as chorea, recurrent tonsillitis, peritonsillar abscess, eustachian tubal catarrh, and mouth breathing when due to obstruction from this source. In all these conditions ultra-conservatism is unwise. But then, on the other hand, the mere fact that a child's tonsils are enlarged should not necessarily indicate that they should be removed. In many of these cases there is no obstruction to breathing occasioned by their presence and there is no evidence that they are in any way pathological. Wright has called attention to this and has claimed that there is a greater degree of resistance to infection in the enlarged, pedunculated tonsil than there is in the smaller or more submerged gland. He has also demonstrated

by a series of experiments that infection in a previously healthy tonsil does not penetrate the epithelium, regardless of how hypertropic it is.

Local Anesthesia in Tonsil Work

Except in nervous adults, the operation is best done without a general anesthetic. Mopping the pillars and tonsils with a four per cent. solution of cocaine will produce an anesthesia sufficiently pronounced in nearly every case. It is unnecessary to inject the pillars. Cocaine, when injected, is more readily absorbed, and causes undue pain following the operation.

Under local anesthesia the operation is greatly simplified because the patient is able to co-operate with the surgeon and, should there be bleeding, clears the blood out of the throat as directed. With cocaine anesthesia properly administered there is usually no retching or gagging.

In nervous patients and in children under twelve years it is better to give a general anesthetic. This is especially true in the case of children. It is useless and cruel to subject a child to an operation of which it has no conception, except that it is being tortured. The child's struggles make the operation slow, difficult and often a failure.

Choice of General Anesthetic in Tonsil Operations

There is a good deal of difference of opinion in regard to the choice of an anesthetic. Some surgeons are using chloroform exclusively because of the fact that

under chloroform the throat is free from mucus; a decided advantage, 'tis true, but there can be no doubt that chloroform is also one of the most dangerous anesthetics. Ether, from the standpoint of the patient's immediate safety, is a desirable anesthetic, but it predisposes to pneumonia and, in throat work, it is more difficult to keep the field free from mucus than when other anesthetics are used. It is also true that after a tonsil operation with ether there is more retching and vomiting than from any other anesthetic and consequently more danger of hemorrhage, to say nothing of the pain caused the patient by the act of vomiting.

Probably the best anesthetic for tonsil work is a mixture of gas and ether. An anesthetic commenced by the administration of gas does not alarm the patient. The gas is odorless and the patient does not experience the sensation of choking. After five or six inhalations the glandular reflexes are abolished and the ether can then be used without producing a flow of mucus. This is a great advantage.

Instruments Employed in the Waugh Operation

Waugh's tissue forcep operation, supplemented with the snare is, in the author's opinion, the simplest, safest, most quickly performed and efficacious of all procedures for the removal of the tonsil in its capsule. In this operation no cutting instrument is used. The operation, minus the snare, was devised by Mr. Waugh of the Children's Hospital, London, and is performed by him with but two instruments—specially made tissue forceps and seizing forceps. I have done the modified Waugh operation in a large number of cases without any serious

hemorrhage and free from all other troublesome complications with which I had to contend when other methods were used.

I use Moseley snares, which are made with an extra large eyelet to accept a No. 10 piano wire. This heavier wire is an advantage because it has body enough to enable the operator to use some pressure in applying it around the tonsil. The tissue forceps are of the Ochner variety, which are long, heavy and devoid of teeth. The most satisfactory tonsil seizing forcep which I have ever found is made from a tonsil punch deeply serrated. The teeth thus formed will hold firm to the tonsils, where the ordinary tonsil forceps will cut through and fail to hold.

Technique of Waugh Operation

The surgeon with the left hand grasps the left tonsil with the forceps and pulls it outward from its base. The tissue forceps are applied, one blade slipping between the tonsil and the capsule. By a quick outward movement that portion of the pillar is freed from tonsil. The forceps are re-applied and the process of pulling away the pillar goes on till the tonsil is entirely free and is only retained in its place by its base. This method has a great advantage over knife or scissors dissections, which cut pillars and tonsil alike, and it may usually be accomplished without the slightest hemorrhage. The left side completed, the pillars of the right are freed in the same manner. The operator is now ready to apply the snares. The simplest way to do this is to throw the seizing forceps through the snares. This done the forceps are applied, the tonsil being pulled as far outward as possible, at the same time the snare is pressed well in against its base. Care must be

taken not to have the loop too large or it will engage the soft palate or uvula as it is being set. One snare is now set and left in place, held by the assistant, while the other is being applied. It is extremely necessary to do this if one wishes to get through the operation successfully, for if one should eneucleate one tonsil before the snare is set on the other side the hemorrhage, though even slight, will materially interfere with the rapid removal of the other tonsil. Both snares being set, it is the work of but a few seconds to screw them home. This is done by both snares simultaneously, one in the hands of the surgeon, and the other manipulated by his assistant. The heavy wire carries a portion of the capsule into the eyelet of the snare so that when the snare is removed the tonsil comes with it.

After Treatment of Patient following Tonsillectomy

There is usually much pain following a complete tonsillectomy, regardless of how skillfully it has been done. Every throat surgeon will have noticed that the pain, the exhaustion and shock following this operation is not in proportion to the amount of trauma produced. Postoperative pain can be relieved to a great extent by an ice pack to the throat. Morphine hypodermically is justifiable in cases when the pain is intense.

There is very little after treatment indicated. A Dobell's solution gargle the following day will give some relief and will clean the throat and mouth. It should not be used the first twelve hours, as the act of gargling predisposes to hemorrhage. Swallowing in the cases of adults gives some pain for a few days. Children, as a rule, do not complain of this pain upon deglutition. In

adults the pillars may be touched with a four per cent. solution of cocaine fifteen minutes before a meal. This will give great relief in all cases. Post-operative hemorrhages occasionally occur. These may usually be controlled by the application of ice to the throat or by swabbing the wound with creosote or with turpentine. Occasionally the pillars will have to be sewed together. I use specially devised tonsil clips for application to the pillars. These are applied quickly and easily, and are always effective in stopping the hemorrhage. The old-fashioned clamp is a crude, painful affair, but in an emergency gives good results.

Vincent's Angina

The term Vincent's angina applies to a membranous involvement of the tonsils, pharynx, or mucous membrane of the mouth, resulting from invasion by the fusiform spirilla of Vincent. It usually presents itself in a mild form with no constitutional symptoms, though occasionally the necrosis of tissue is extensive, in which case there is apt to be lymphatic enlargement with some pain and a slight rise of temperature. Frequently the condition is mistaken for diphtheria, which fact emphasizes the necessity for microscopical examinations of secretions in all extensive ulcerations of the throat and mouth.

Treatment:

The treatment consists of gently curetting the areas involved, in order to liberate the adherent membranes, and in painting the underlying surfaces with antiseptic

solutions, such as the nitrate of silver. The following formulæ are of value:

℞. Sol. hydrarg. chlor. corros. (1:500)
Sig:— Apply to involved areas two or three times a day.

℞.	Phenol,	grs. xv
	Tr. iodine,	dr. ii
	Aqua dest. q. s. ad.	oz. viii

M. Sig:— Gargle 3 or 4 times a day.

Elongated Uvula

Chronic catarrhal inflammation of the nasopharynx sometimes results in a permanent relaxation of the uvula with marked redundancy. This is accompanied by a sensation of tickling in the throat and often by a harassing tendency to clear away an imaginary obstruction. Often there is a cough, of an annoying, hacking character, which is aggravated by lying down, due to the uvula falling against the pharyngeal wall.

Treatment:

After an elongation of the uvula has been in evidence for some time, medical treatment offers very little in the way of effecting a cure. Astringent gargles may be tried and are sometimes helpful. Touching the uvula with chromic acid is sometimes done with a view to shortening it by contraction of the scar tissue. This is a painful process not to be advocated. The rational treatment of the disorder consists of the operation of uvulotomy. Under no circumstances should the amputation remove the uvula entirely, as the scar tissue resulting may ham-

per the free movement of the velum palati and may thus interfere with speech.

The author strongly recommends the following:

℞.	Aluminia,	dr. i
	Acidi tannici,	dr. i
	Aquae rosae, q. s. ad.	oz. i
M. Sig:—	Apply to relaxed uvula.	

℞.	Aluminis,	gr. xxx
	Sodii boratis,	gr. xxxx
	Glycerini,	oz. i
	Tinct. myrrhae, q. s. ad.	oz. v
M. Sig:—	Gargle 4 or 5 times a day.	

℞.	Acidi thymici,	gr. v
	Acidi benxoici,	gr. xv
	Ess. menthae pip.	m. xv
	Tinct. eucalypti,	dr. ii
	Aquae dest. q. s. ad.	oz. v
M. Sig:—	Use as a gargle when uvula elongated.	

Uvulitis

The most frequent cause of inflammation of the uvula is the process of "catching cold." Often this inflammation is the result of involvement from adjacent structures, such as peritonsillar abscess, tonsillitis, or severe inflammations of the pharynx. Occasionally the disease occurs spontaneously, or precedes a general inflammation of the throat. The condition is apt to be a painful one, particularly is this so during deglutition. Sometimes the engorgement is so great that the edema extends over all of the soft palate. The uvula, upon examination, is seen

to be pale in color, due to the retained serum, and hangs downward like an extended bladder.

Treatment:

This, in the early stages, may be directed toward reducing the engorgement of the uvula with astringents. For this, adrenalin chloride, one to one thousand, may to advantage be painted on the mucous surface. The nitrate of silver solution of 10 per cent. strength, is also very valuable in preventing the progress of the disease. Multiple punctures into the uvula, with a very fine knife, may be resorted to as the engorgement becomes great. Astringent gargles are indicated in all stages of the disease.

The following prescriptions will be found valuable:

℞.	Potassii chloratis,	dr. i
	Tinct. myrrhae,	grs. xxx
	Aquae destillatae, q. s. ad.	oz. x
M. Sig:—	Use as throat wash 3 or 4 times a day.	

℞.	Saloli,	gr. x
	Catechu,	gr. xx
	Spiritus menthae pip.	oz. i
	Aquae dest. q. s. ad.	oz. v
M. Sig:—	Use as a gargle after meals.	

℞.	Sod. bicarb.	dr. i
	Sod. bi bori,	dr. i
	Acid carbol,	gr. x
	Glycerin,	oz. i

Aquae, q. s. ad. oz. viii

M. Sig:— Dobell's solution. Use with atomizer 2 or 3 times a day.

Cleft Palate

Congenital malformation of the palate is a condition frequently seen and is usually found associated with the familiar deformity known as harelip. In this type of malformation there is a lack of union of the maxillary processes, which naturally interferes with the voice, and is also an impediment to the act of mastication. Frequently the deformity is confined to the soft palate and, as in rare instances, all the velum palati is absent. A condition known as supranumerary uvula is sometimes met with, which condition is nothing more than a prenatal lack of fusion of the tissues.

Treatment:

Absence of the velum palati is irremediable. A number of operations, principal of which is the method of Brophe, give successful results in cleft palate. The bifid uvula should not be disturbed unless it is otherwise involved.

Diphtheria

There are few diseases in which an early diagnosis is so imperative as it is in diphtheria. True Kelbs-Loeffler infection often bears a distinct clinical resemblance to simple membranous pharyngitis or ulcerated tonsillitis, and for this reason many cases of diphtheria remain undiagnosed, until the disease is so far advanced that the

patient succumbs, regardless of treatment. In all these suspected cases a smear should be taken immediately and subjected to microscopic examination, and if found negative, a culture should be made also and examined. While many parents will not permit of the institution of antitoxin treatment until a positive diagnosis of diphtheria is made, it is wise in all suspicious cases to make at least an effort to obtain such permission, and if consent be given, to administer antitoxin in full doses.

Treatment:

Antitoxin has practically revolutionized the treatment of diphtheria, and while it is one of the most efficacious remedial agents known, the disease, regardless of its use, still has a high mortality. It should be administered in heroic doses. A child of five years, suffering with a severe attack of diphtheria, should receive at least ten thousand units of the serum at intervals of twelve hours, until the membrane begins to disappear. While it has been claimed that much danger is attached to the administration of antitoxin in these large doses, we must remember that we are dealing with one of the most fatal diseases which affect the human race. Because of the tremendous mortality of the condition when antitoxin is not given, it is seen that the danger to be anticipated from the drug is so far overshadowed by the perils of the disease that this foregoing danger should not be allowed to deter us in administering as much as sixty to one hundred thousand units in a single case, the doses, of course, depending upon the age and weight of the patient.

Local Treatment

Since the advent of antitoxin, local treatment has been very generally neglected; but there is no doubt that by eliminating the local measures the patient is being deprived of a source of more or less relief. It is a matter of ordinary clinical observation that the membranes may be macerated by local solvents, thereby facilitating their liberation as well as reducing the local inflammation in the throat and adding to the patient's comfort. For this purpose nothing is better than hydrogen dioxide. Tincture of ferric chloride, potassium permanganate, phenol and salicylic acid were favored remedies for local application thirty years ago, and there is much in the literature of that time to indicate that a great deal of good was accomplished by their use. The Dobell's solution spray, much used in the former days, is still a remedy par excellence during the inflammatory stage of the disease.

The following combinations are often valuable:

℞.	Tinct. ferri chloridi,	oz. i
	Potassii chloratis,	oz. i
	Aquae dest. q. s.	oz. x
M. Sig:—	Use as a spray every two hours.	

℞.	Menthol,	gr. vi
	Sol. perchloride of iron,	m. xxx
	Alcohol q. s. ad.	oz. i
M. Sig:—	To be applied with swab in diphtheria.	

℞.	Acidi lactici,	dr. i
	Aquae, q. s. ad.	oz. i
M. Sig:—	Use with atomizer in diphtheria to remove membranous exudate.	

Tracheotomy in Diphtheria

The operation for tracheotomy may be performed above the level of the isthmus of the thyroid gland (high tracheotomy) or below that point (low tracheotomy). The high operation is the one most often done because of the accessibility of the trachea at this point and because it is more free from danger. In the low operation there is more troublesome hemorrhage and even when the utmost care is exercised blood sometimes seeps into the trachea during the operation forming a clot at the bifurcation of the bronchi causing death from suffocation.

The high operation is performed in the following manner: The patient is placed upon a table, his shoulders elevated and his head thrown back. This brings into prominence the thyroid and cricoid cartilages—important landmarks.

The broad superior edge of the thyroid should be located with the index finger. Immediately below it is the cricoid. The incision begins midway between the cricoid and superior border of the thyroid and is carried an inch below the cricoid. The skin is retracted and the superficial and deep fascia is now divided and with the muscular tissue, pushed aside with a grooved director. Unless immediate necessity for a rapid operation exists the bleeding points should all be caught and the wound left dry before the trachea is opened. The trachea, while being incised is held by a tenaculum, while the bistoury, inserted immediately above the thyroid isthmus, which usually lies over the fourth trachea ring, divides the first three or four rings of the trachea. If the isthmus is situated high up, it may be pushed down with the finger.

As soon as the trachea is opened the patient coughs violently, very often expelling large pieces of membrane. When the oozing stops the canula may be inserted and held in place by pieces of tape tied about the neck, or by strips of adhesive plaster. The inside tube may be removed as often as necessary to be cleared of débris and mucus.

The low operation requires practically the same technique except more care should be exercised so as not to wound blood vessels which pass over the field of operation, and which, if cut, may cause a very annoying hemorrhage as the field must be dry before the trachea is opened.

The operation may be done under general or local anesthesia, or with no anesthetic at all where instantaneous relief is demanded to save life from suffocation. Chloroform rather than ether is preferred by most surgeons because it is free from spasm producing effect upon the laryngeal muscles which ether is said to possess. The writer has performed two tracheaotomies upon small children under weak solutions of cocaine, little pain being evidenced by the patients.

After the operation the patient should be kept under constant surveillance to prevent the plugging of the tube from shreds of membrane. Secondary hemorrhage forming a clot in the trachea, though not a frequent complication has been the cause of several deaths, and its possibility should not be disregarded. Young children are very apt to pull the tube out, if not carefully watched. This accident occurred in a case that came under my observation a few years ago that resulted in suffocation and death of the patient.

Intubation in Diphtheria

In 1858 Bouchet of Paris passed tubes into the larynx of the living subject, but nothing of value came of his experiments until several years later when O'Dwyer, a physician in charge of the New York Foundling Asylum, inspired by the experiments of Bouchet, invented and successfully used, in many cases of diphtheria with suffocative symptoms, the instruments for intubation which bear his name.

O'Dwyer's set of instruments, which have not been materially modified since first given to the world, consists of a mouth gag, a thimble for the surgeon's finger, an introducer, an extractor and a set of tubes graduated in size. These tubes are made with a bulging top, which, when in place, rest upon the false cord. A scale comes with the set indicating by number the size of the tube appropriate to the age of the patient. At the top of each tube is an eyelet into which a string is tied before the tube is introduced. This is to prevent its being lost in the larynx or esophagus should a false passage be made.

The introducer is curved and fitted at its distal end with an obturator over which the tube is slipped. A small lever in the handle of the instrument, when pressed, liberates the tube from the obturator leaving it in place in the larynx. The extractor is so fashioned that it can be slipped into the tube, and by a lever attachment, its blades can be separated, thereby holding the tube in its grasp while it is being liberated from the larynx.

When the operation is to be done the child is wrapped in a sheet which holds the arms firmly. It is best held in the lap of an assistant while a second assistant, from

behind, holds the head firmly in a vertical position. The mouth gag is inserted and held by the assistant from behind. A tube suitable to the child's age is selected and attached to the introducer and the operator is now ready to proceed.

During the process he should be on the alert to avoid being infected by the patient who may cough violently during the operation. It is always best to have the eyes protected with glasses and moist gauze tied over the mouth.

The operation, if successfully done, takes but a few seconds. The surgeon standing directly in front of the patient passes the index finger of his left hand over the base of the tongue and feels for the epiglottis. When it is felt it should be drawn forward against the base of the tongue, and held there while the tube, previously oiled, carried by the introducer with its handle against the chest, is made to slip along the side of the inserted finger. As soon as it is felt at the point of the finger which is holding the epiglottis in place, the handle is elevated thereby directing the tube into the larynx.

When the tube is to be removed, the patient is prepared in the same way as for its introduction. The epiglottis is pulled forward with the index finger of the left hand and the extractor is guided with the same finger into the larynx. The blades are separated and the tube is withdrawn. Should dyspnea follow its removal, it should be reinserted.

Some difficulty may be experienced in feeding intubated children. This should not be attempted while the child is in a sitting posture, as the food will enter the larynx. The diet, if liquid, should be administered from a bottle, while

the patient lies upon its back, with the buttocks and feet elevated. Solids, which do not enter the trachea while lying on the back, may be fed to the older patients.

Acute Laryngitis

The pathology of acute laryngitis does not differ materially from that of acute inflammatory conditions of the upper air passages generally. Upon excitation from cold or other causes there is at first vascular contraction which gives way quickly to dilatation, with consequent engorgements. This causes slight stenosis and difficulty in breathing at times, the symptom being noticed particularly in individuals with small larynxes.

The mucous membrane is at first dry and harsh, but this symptom is relieved upon the third day, usually, by normal or hyper-secretion, the latter, when occurring, resulting from a leaking process which takes place in the engorged capillaries. The secretions are at first mucoid, but later become thick and tenacious, due to a desquamation of leucocytes and dead epithelial cells.

Acute laryngitis, though usually ushered in with sensations of chilliness, malaise and occasionally with slight fever, causes very little concern in the patient, as a rule, till the voice becomes husky or is partially lost. There is generally very little pain and practically no local tenderness. The cough, which is often intense, is always more or less annoying, and causes a "pin pricking" sensation in the throat. There is very rarely sufficient edema to cause more than a slight impediment in breathing in adults. In very young children attacks of suffocation occasionally occur during sleep; this, however, seldom happens in uncomplicated cases of acute laryngitis.

After the third or fourth day, usually, the dryness of the throat gives way to more or less profuse secretion, and the symptoms, with the exception of hoarseness, are relieved.

Unfortunately the loss of voice, one of the most annoying symptoms to the patient and one usually responsible for his visit to the physician, often remains for days after all other symptoms subside. This is not always easy to explain and often gives rise to dissatisfaction in the patient and to some embarrassment to the doctor. It is not unusual for the patient to drift away before his hoarseness disappears and attribute his restoration of voice to the use of some quack remedy.

Treatment:

The temperature of the room should be kept uniform and its ventilation should be free and continuous. A vessel kept steaming upon a stove, wet blankets hung up above the room, or any device which will keep the air permeated with moisture is very soothing to the patient and is indicated during the dry stage of the disease. Occasionally spraying the throat with camphor-menthol drachm one, and liquid alboline, ounces two, followed by deep inhalations of the same preparation, will be found of service. For the dry hoarse cough opiates in small doses are indicated. When the secretions become free and tenacious Dobell's solution should be used as a spray. Though not much of a spray which is not inhaled can be gotten into the larynx proper, it serves to clear away the crusts from the epiglottis and the base of the tongue and is therefore beneficial. The patient should be admonished not to use the voice in more than a whisper. With this line of treatment carried out most cases recover in a few

days and only in the rarest instances will the condition become one of chronic inflammation of the larynx.

The following formulæ usually afford some relief:

℞.	Ammonii carbonatis,	gr. iii
	Tr. scillae,	dr. x
	Infus. cascarillae, q. s. ad.	oz. ii

M. Sig:— Teaspoonful every six hours as an expectorant in acute laryngitis.

℞.	Eucalyptol,	gtts. v
	Menthol,	gr. v
	Camphor,	gr. v
	Liq. vaselin, q. s. ad.	oz. i

M. Sig:— Use with spray in acute laryngitis for its sedative effect.

Chronic Catarrhal Laryngitis

Enlarged tonsils and adenoid growths are responsible for many cases of laryngitis. Persons who breathe through their mouths carry into the larynx, twenty times or so a minute, a current of air which has not been freed from dust by the filtering process of the nose, and which is not moistened and warmed. The consequences are that the larynx is kept dry and irritated and responds rapidly to atmospheric changes. Some authorities on the throat have reached the conclusion that in mouth breathing cases there is kept up a mild, almost unnoticed, chronic inflammation of the larynx which becomes aggravated under the influence of exposure to cold or irritation from dust.

Next to mechanical malformations of the nose and

throat the most frequent predisposing causes may be found in warm, badly ventilated living rooms. Any physician who visits Mexico during the winter months will be forcibly impressed by the number of husky voices, due to laryngitis, which he will hear each day. Its great prevalence there among the poorer classes is no doubt due to the fact that these people live in mud huts whose only ventilation is the door, and this source of fresh air is closed up at night. Among the peasantry of southern Europe ventilation is no more a hobby than with the poorer Mexicans and there, as in Mexico, laryngeal inflammations are very common. Irritating fumes from oil stoves, lamps, gas tanks, or chemical vapors of any kind will often bring on in the apparently healthy an attack of acute laryngitis. Persons who live indoors habitually are very prone to laryngeal colds.

The use of iced drinks or extremely hot drinks relaxes the mucous membrane of the throat and should be discouraged. Muffling up the throat is not a good practice, because it lessens its normal resistance. Over indulgence of this kind is injurious, because it destroys the power to withstand the effects of slight changes in temperature. The hardiest specimens of American manhood are to be found in our navy, and these go the year round without any covering whatever to the throat, and are not troubled to any extent with diseases of that organ.

Treatment:

Purgation is one of the most important indications in exacerbations of chronic laryngitis. This, by depletion, protects the patient from edema which is often associated with this disease. Pilocarpine meets the same indication

by relaxing peripheral blood vessels and lessening local pressure. This may be pushed until sweating is profuse.

Hot mustard foot baths, by their revulsive action, do good. Dover's powders is a general favorite among laryngologists and often serves materially to mitigate the symptoms. For several years I have pushed aconite to its full physiological effect with beneficial results. My own experience leads me to believe that it is possible to ameliorate the distress in all cases of chronic laryngitis with this drug. The air in the room occupied by the patient must be kept moist. A wet blanket or wet bath towel thrown upon a radiator or hung before an open fire will provide sufficient humidity for the purpose.

Tuberculosis of Larynx

It is very doubtful if primary laryngeal tuberculosis exists. In the literature of a dozen years ago such cases were frequently reported, but we must remember that during this period and before, pulmonary tuberculosis was not diagnosed until the tubercule bacilli made their appearance in the sputum. This did not occur until the tubercules had broken down, possibly months or years after the disease was incipient. It is not known how the infection reaches the larynx, but it is probable that its path does not follow the lymphatics as was at one time supposed, but that the condition is due rather to a local implantation of the bacilli into an area of the larynx where continuity of structure has been disturbed by coughing.

Attention is usually called to the condition by the advent of hoarseness. This symptom, long continued, is

very suggestive of involvement of the larynx with tubercule bacilli, if the patient is a victim of pulmonary tuberculosis. In those apparently healthy, however, it is of little importance in diagnosis, as syphilis and carcinoma of the larynx, as well as the various paralyses of the vocal cords, may produce partial or complete aphonia. Prior to a breaking down of the infiltrated areas in the larynx there is little pain, but this may be intense after the ulceration is well established; particularly is this so if the epiglottis is involved. Coughing often aggravates the pain and, in the advanced stages, when the epiglottis is affected, the act of swallowing is almost intolerable.

The larynx, as seen in the laryngeal mirror, presents a clinical picture not apt to be confounded with that of any other disease. The involved areas are surrounded with the pale blush, so characteristic of all tuberculous lesions of the mucous membrane. The margins of the ulcers are serrated. There is only moderate infiltration and the secretions are mucoid and viscid in appearance. When tubercules which have not undergone ulceration are seen, they appear as very small, pale elevations upon the surface of the mucous membrane.

Treatment:

The general treatment is similar to that of pulmonary tuberculosis. The patient must be put to bed and be given a nutritious diet, the greater part of which should consist of eggs and a good grade of fresh milk. If the patient can afford the care to be obtained at a good sanatorium, he should not lose any time in taking advantage of the opportunity of entering one. The throat should

be put at absolute rest by a complete restriction of conversation. Numerous local treatments, much lauded by different laryngologists, are of doubtful service. The chalmoogra oil, applied directly to the infiltrated and ulcerated areas, has been much used during the last year or two, and while the favorable results reported have been much controverted, it is probable that it does have some merit. Any of the hydro-carbon oils, sprayed directly into the larynx, are beneficial, because of the mechanical protection which they afford to the mucous membrane. When dysphagia is marked this symptom may be much allayed by spraying weak solutions of cocaine into the larynx before food is taken.

The condition is much ameliorated by the following:

℞.	Ol. Chalmoogra,	oz. i
	Tinct. aconiti,	m. v
	Potassii bromidi,	dr. vi
	Aquae,	oz. iv

M. Sig:— Teaspoonful in water every two or three hours.

℞.	Cocaine hydrochlor	gr. x
	Hydrogenii dioxidi,	dr. vi
	Sodii bicarbonatis,	dr. i
	Aquae, q. s. ad.	oz. viii

M. Sig:— Spray into larynx every hour or two.
Useful in painful ulceration.

℞.	Menthol,	dr. i
	Olci eucalypti,	oz. i
	Tinct. benzoini,	oz. i
	Tinct. Tolutani, q. s. ad.	oz. i

M. Sig:— Vaporize by heat and inhale.

Hysterical Aphonia (Functional Loss of Voice)

This is not a rare psychic disturbance and is oftenest seen in physically impoverished, or overworked children, of a highly nervous temperament. While a child is in school it is more vitally important to look after its physical than its mental growth. A hindrance to the physical development of the pupil during its school life cannot be compensated for by any degree of mental accomplishment. During the years of school life, a child is either building up a good physique as it develops its brain or is paving the way by badly directed efforts to digestive, nervous and circulatory disturbances.

A close observer will notice that a child does its best work after a period of rest, that better results are accomplished early in the morning and that the long drawn out home lessons are not only badly assimilated, but that this unnatural pressure of work more or less unfits him for the tasks of the following day. The requirement of such home lessons for young children is bad if the child's welfare is to be considered. During the day his mind has been applied more or less closely and a change of thought is essential to the healthy development of his brain power. Intense application uses up what may be termed his reserve nerve force. When this nervous reserve is interfered with he becomes pale, irritable and fidgety, has bad digestion and, if the cause is not removed, takes his first step upon the road which leads to neurasthenia and ill health in later years.

Treatment:

The patient should be given an entirely different environment. If the suggestion of a complete change is

not complied with, the school hours should at least be broken up into periods of instruction and relaxation, and the more systematic and pleasing the relaxation the more benefit will be derived. If we keep in mind that over application is injurious to bodily strength, and that bodily strength controls mental growth, that education which interferes with the perfect development of manhood or that develops a girl's mind at the expense of her fitness for motherhood is the worst form of excess, a great step toward human progress would be made.

An appropriate reconstructive treatment, such as tonics of iron and arsenics together with proper rest, correct periods of sleep and plenty of good, nourishing food is indicated. Electricity, especially the violet ray, may be tried for its psychic effect. Fright will almost always restore normal voice in these cases, but the aphonia will recur when the patient becomes calm.

The following formulæ are highly spoken of:

℞.	Quinine velerianitus,	gr. xl
	Glycerine, q. s. ad.	oz. iv
M. Sig:—	Teaspoonful in water after meals.	

℞.	Ammon velerianitus,	dr. i
	Liq. potassii arsenitis,	dr. i
	Elix. simp., q. s. ad.	oz. v
M. Sig:—	A teaspoonful 3 times daily in water.	

Paralysis of the Vocal Cords

These paralyses may be caused by effusion into the pericardial sac, enlarged glands, growths in the esophagus or mediastinum, exudates in the pleural cavity, or condi-

tion which brings to bear pressure upon the nerve trunks. Very often they are due to central lesions, such as emboli, tumors or gummata. Another very common cause may be found in local inflammation in the larynx, which impedes the action of the muscles themselves, by pressure upon them from the products of inflammation.

The larynx is supplied exclusively by the pneumogastric nerve. One branch, the superior laryngeal, supplies the larynx with sensory fibers and with motor fibers to the cricothyroid and thyroepiglottidean muscles, and therefore, is of little importance in a study of these cases. The vocal cords are adducted and abducted by the cricoid cartilages to which they are attached. The muscles giving them movement are presided over by the recurrent laryngeal nerve, therefore a knowledge of its distribution is important. The right recurrent arises at a level and in front of the right subclavian artery and ascends between the trachea and esophagus, enters the larynx at the lower border of the cricoid cartilage and distributes its fibers to the muscles. The left recurrent arises at a level and in front of the arch of the aorta and ascends a little in front of its fellow, that is, a little beside, rather than behind the trachea, to enter the larynx in the same way as the right recurrent.

It will be noticed that in paralysis of the vocal cords the recurrent laryngeal are the nerves affected. I think we can safely say that in seven-eighths of the laryngeal paralyses these nerves are alone involved which fact shows how simple it is to obtain a working knowledge of these conditions. Pressure on the nerve during its course is the most frequent cause of laryngeal paralysis. This is particularly true on the left side because of its close relation

to the arch of the aorta it is exceedingly likely to be interfered with by aneurysms of that vessel. I remember having seen a case in a Chicago clinic, where the aneurism had not been diagnosed till laryngeal examination showed a paralysis which called attention to this organ.

Intra-Laryngeal Cancer

With our present development of intra-laryngeal examinations by the direct method, a failure to make an early diagnosis of tumors within the larynx falls into the classification of the reprehensible. In the days of indirect laryngoscopy this statement would, of course, have been extravagant, as sections for examination were then procured with the greatest difficulty, if indeed an effort at the removal of a portion of tumor from within the larynx for laboratory examination did not result in direct failure. Those who have attempted to obtain such specimens by the old method will remember the retching and often the vomiting of the patient, the obscuration of the field of operation by blood and mucus, and without unusual good fortune, the lamentable failure of the procedure. However, with our modern methods this is all changed. The gagging of the patient is now not to be considered an obstacle, as the surgeon is working over an instrument which completely overrides the tongue. The blood need not be troublesome as it may be kept out of the field by an intra-laryngeal aspirator. The larynx is seen in its normal position, not inverted, and the grasping forceps are applied by direct vision, not by the aid of an elusive shadow in a mirror. By the old method the operation, when successful, took several minutes; it can now be accomplished so quickly and so easily that

those who have not witnessed the procedure can with difficulty appreciate its simplicity.

Cancer may originate as small nodules upon the vocal cords in persons who use their voices excessively. The inference that such nodules are the so-called "singer's nodes" and are innocent is misleading and dangerous.

No neoplasm of the larynx, occurring in late adult life, should be pronounced non-malignant until a section is procured for laboratory examination.

Treatment:

Before the present method of securing intra-laryngeal specimens became perfected there were few pre-operative laboratory examinations and the treatment of intra-laryngeal growths necessarily suffered the severe handicap of being based largely upon guesses as to the nature of the condition under observation. The brilliancy of the results obtained within the last few years, however, with direct laryngoscopy as an aid to the removal of sections for study, has entirely changed our outlook and I might say our prognosis, regarding neoplasms of the larynx of whatever type.

All growths within the larynx should be as completely removed as possible by direct laryngoscopy. If the growth is benign the operation results in cure. If found to be malignant no harm is done by disturbing the neoplasm, if immediate laryngectomy is performed. Total laryngectomy, while attended by a high mortality, should be the operation of election in cancer. Partial laryngectomy is justifiable only when the radical operation is refused.

Radium therapy in cancer is indicated as an adjunct

to surgery only. It is doubtful if a case was ever cured by radium alone.

The outlook in laryngeal cancer is bad at best, early operation offering the only hope. When procrastination is practiced the disease is always fatal.

Glanders

Glanders is a condition caused by infection with an organism thought to be the bacillus mallei. Primarily it is a disease of the lower animals, especially of the horse, but it is readily communicated to man and has been, in certain instances, transmitted from one person to another. The disease is characterized by an inflammation of the mucous tract, with associated adenitis. This gradually involves one chain of glands after another, till multiple abscesses of the glands exist. Recovery is rare, the patient usually dying of pyemia or exhaustion, although the fatal termination of the disease may be delayed for two or three years.

Treatment:

Curetting and disinfecting the abscesses has been advocated, together with antiseptic washes. The iodide of potash has been recommended, and its use possibly does have some influence over the disease. Regardless of what treatment is instituted nearly all infected individuals succumb.

Hemoptysis (Spitting of Blood)

Patients with hemoptysis often attribute their condition to some trouble with the nose and throat. This is so

frequently believed by the patient as to be almost characteristic of early hemoptysis. I can recall several cases where patients came to me to have their throats examined, because they were spitting blood. Subsequent developments proved that all of these patients had tuberculosis.

It is rare to see a person coughing and expectorating blood who does not have tuberculosis. Varicosities upon the pharyngeal wall and neoplasms of the larynx occasionally do produce hemorrhage, but not in over one or two per cent. of the cases seen. Blood from the lungs is easily differentiated because of its frothy character. Should the bleeding be due to a rupture of a blood vessel in the throat, its source may be detected readily by a careful inspection.

Treatment:

This of course will depend upon the cause. The patient must immediately be put to bed and be given an opiate. Stimulants are contra-indicated. If the hemorrhage is from the throat, the point of its origin should be sought for. The bleeding may be arrested by pressure or by the application of subsulphate of iron, adrenalin chloride, or thromboplastin. In obstinate cases 20 cubic centimeters of normal horse serum or 6 minums of adrenalin chloride (1:1000 solution) should be given at once intravenously.

Common salt, as below indicated, occasionally has some merit in controlling the bleeding:

℞.	Sodii chloridi,	dr. ii
	Ft. Chart,	No. X
Sig:—	Dissolve in mouth and swallow hourly.	

Foreign Bodies in the Esophagus

The foreign body in the esophagus is not a formidable accident and very few failures at their removal are made, especially if the substances are metallic in nature. The non-metallic ones will, of course, be more difficult to get at. Boyce has originated a method of locating the non-metallic esophageal foreign body, large enough to close the lumen of the tube, which is of excellent service. This consists of administering a large capsule filled with bismuth and, before it has had time to dissolve, having an X-ray picture made of it. I have never had occasion to use this method but several years ago, acting upon the same principle, I administered to a patient several balls of bismuth and dough, followed by immediate X-ray pictures, for the purpose of locating the position of a carcinoma of the esophagus. While nothing was ever done for the patient the method, as far as location of the obstruction was concerned, was a success.

Fortunately, it is a matter of common observation that metallic cases are encountered by the laryngologist in greater numbers than are the non-metallic ones; possibly in a ratio of three to one. This is due, no doubt, to the fact that many non-metallic substances remain in the air passages or esophagus, undiagnosed, for long periods, whereas the metallic substances, if suspected at all, are, in nearly every instance, located by either the fluroscope or skiagram. I have known of several instances where operation was refused because the X-ray failed to reveal a foreign body, the patients later getting rid of the offending particles, spontaneously, either by passing them from the bowels or expelling them during attacks of coughing.

If the experience of other surgeons corresponds to mine, coins are encountered in greater numbers than are any other objects. Again we are fortunate for in an attempt to remove an article that we are perfectly familiar with we are much more liable to succeed. Nine of my cases have been coin cases, five being in the esophagus, three in the larynx and one in the trachea. During the last year I have removed from one child, still less than eighteen months old, three coins, one having lodged in the larynx and two in the esophagus. Buttons come next to coins in frequency. They usually lie in the lower portion of the larynx and their position is always longitudinal. The smaller ones sometimes drop into the trachea, just as other small metallic objects are apt to do.

Foreign Bodies in the Trachea and Bronchi

Foreign bodies may remain undiagnosed in the trachea or bronchi for long periods. It is a remarkable fact, too, that if they are not freely movable they may cause very little distress to the patient. In one case coming under my notice, a small circular band, three or four millimeters in diameter, was carried in the bronchus for over a year and was finally coughed up by the patient. In another instance a screw was wedged into the larynx and retained for several months. Moveable substances, on the other hand, which slide up and down in the bronchi, almost invariably keep up a constant irritation, accompanied by a very distressing cough. One of the most alarming cases I have had, with threatened asphyxiation, was caused by a watermelon seed in the trachea.

The high operation is the procedure of election in tra-

cheal and bronchial cases. Formerly the low operation through a bronchial opening was frequently done, because the technique of passing the tube per ora had been mastered by only a few surgeons. I have had occasion to do the low operation but once. This was in a case who had a great deal of edema in the larynx and showed signs of asphyxiation at each attempt to pass the tube per ora. The trachea was then opened, a bronchoscope inserted and the foreign body, a cotton seed, in the right bronchus, was sought for and removed.

Endoscopy in Foreign Body Cases

While tremendous strides have been made in the last few years in the art of the removal of foreign bodies from the air passages and esophagus there can be no doubt that endoscopy is still in its formative period. This is indicated by the diversity of opinion regarding a number of very important phases of the procedure. A controversy, not without its unfortunate developments, has long been going on regarding the best method of suspension, whether by hand or by use of the crane or gallows. The question of anesthesia is also far from being agreed upon and opinions regarding the importance of the fluroscope, as a guide to operation, still vary greatly. Another difference of opinion, often found in the literature, is in regard to a very important question, viz.: Who among us are justified in attempting endoscopy? Some contend that all such cases should go into the hands of the recognized experts in endoscopy and there is some ground for this contention. Regardless of what some of the text books have to say about it, the recovery of any foreign body, metallic or otherwise, from

a bronchus, is not an easy matter for the average laryngologist. The pin or needle, gliding down the walls of a posterior bronchus, becomes almost entirely inaccessible, and in the hands of even the most expert, efforts at removal often end in dismal failure. The difficulty is increased if the particle inhaled has been long in situ. If this is the case it is most certain to be covered with granulations, or perhaps be bound in by adhesions, and its removal is sure to present the most formidable difficulties, with great danger to the patient's life. It is sometimes not as easy a matter to pass the bronchoscope and remove even a seed or bean or any substance that cannot be demonstrated by the fluroscope as it would appear in the average text book. Perfection in this work, the result of much experience, has come to only a few men in this country. The balance of us will be no more efficient than our actual experience has made us.

I think it is imperative, however, that one or two men in each city of 100,000 or more people should become as expert as possible in performing endoscopy. It is the most obvious fact that cases will be encountered frequently who will find it impossible to go elsewhere for relief. Just what patients are to be accepted will, as in all surgery, be governed by the experience, the courage, the skill and the limitations of each surgeon. I do not think the average laryngologist, with good training, should hesitate to attempt the removal of any large, recently received foreign body in either the esophagus, trachea, or larynx. If he has the proper equipment and has become familiar with it on either the dog or manikin, he will probably succeed.

Anesthesia in Endoscopy

Should we give an anesthetic? In cases of foreign body in the esophagus, the general anesthetic, is, in my opinion, always desirable. With a struggling child there is kept up a continuous regurgitative movement of the walls of the esophagus, due to spasmodic contraction of its circular fibers, which materially impedes the efforts of the surgeon. In two cases, when numerous attempts at removal of a foreign body in the esophagus without anesthesia had been unsuccessful, the author succeeded in their extraction in less than ten minutes in each case. I have never hesitated to give an anesthetic for the removal of a foreign body of any nature in the esophagus, for the reason that the operation is facilitated materially by the subject's non-resistance, takes but a few minutes, and the patient is in no more danger from the anesthetic than he would be were any other operation being performed. In operating in the bronchus, however, when the procedure lasts for long periods, a general anesthetic is usually contra-indicated, because of the greater danger to pneumonia which it originates, the more likelihood of asphyxiation and the greater amount of mucus encountered.

THE END

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